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LABORATORIOS ROEMMERS junto al HOSPITAL UNIVERSITARIO AUSTRAL investigan un medicamento para el tratamiento de COVID-19 en etapas precoces de la enfermedad, en busca de evitar su progresión a estadios más graves

El Dr. Marcelo Silva, investigador del Hospital Universitario Austral, junto a su equipo de Investigación Clínica, han dado inicio a un estudio de eficacia y seguridad del medicamento nitazoxanida en el tratamiento de pacientes con infección por virus SARS-CoV2 (COVID-19) con síntomas leves o moderados. El objetivo principal de la investigación será el de evaluar si el medicamento evita la progresión de la enfermedad a estadios adonde se requiera la internación con asistencia intensiva.

La nitazoxanida es una droga de producción nacional utilizada frecuentemente en Argentina y otros países para el tratamiento de otras infecciones.

"A diferencia de otros estudios, éste será controlado con placebo. Esto es relevante porque se podrá determinar más objetivamente el efecto sobre la patología", precisó el Dr. Silva. *"Esperaremos los resultados del estudio piloto inicial para determinar si efectivamente podría sumarse al arsenal terapéutico contra el COVID-19",* agregó el investigador.

Es importante señalar que se trata de una nueva indicación de una droga que ya ha demostrado ser efectiva y segura para otras infecciones parasitarias, virales y bacterianas.

Por su parte, Luciano Boccardo, Gerente General de Laboratorios Roemmers, expresó:

"Estamos comprometidos a dar respaldo a la búsqueda de soluciones terapéuticas para esta enfermedad y creemos en el excelente nivel de científicos y profesionales de la salud con que contamos en la Argentina.

El desarrollo de esta investigación, diseñada, coordinada y realizada en nuestro país, está metodológicamente basada en estándares internacionales y las evidencias científicas que genere sumarán un aporte al desarrollo de la ciencia argentina y del mundo.

En abril iniciamos estudios con nitazoxanida en Argentina y Brasil en forma simultánea, posteriormente decidimos dar apoyo a la investigación a cargo del Dr. Fernando Polack y su equipo de la Fundación Infant, basada en la utilización de plasma de convalecientes.

Estamos dispuestos a hacer todos los esfuerzos necesarios para sumar avances en el tratamiento del COVID-19," concluyó Boccardo.

La información y seguimiento de esta investigación se encuentra inscripta y disponible en [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT04463264?cond=COVID-19&intr=%22Nitazoxanide%22&draw=2&rank=7)
<https://clinicaltrials.gov/ct2/show/NCT04463264?cond=COVID-19&intr=%22Nitazoxanide%22&draw=2&rank=7>

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Cirugía biliar en época de pandemia

Experiencia del Hospital de Clínicas “Pte. Nicolás Avellaneda” - (Tucumán-Argentina).

Enrique Toll¹; Federico Antonio Brahin²; Lino Edmundo Campero³; Pablo Gabriel Bolea⁴; Lilia Rosana Garnica⁵.

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Lugar de Trabajo: Servicio de Cirugía General, Hospital de Clínicas Pte. Nicolás Avellaneda, Tucumán, Argentina.

SUMMARY

Background: The rapid worldwide spread of the COVID-19 disease led to the declaration of a Health Emergency, in Argentina Preventive and Mandatory Social Isolation was decreed on March 20, following these guidelines Tucumán had to restructure its Provincial Health System, leaving the Hospital Clínicas Pte. Nicolás Avellaneda, as the only multipurpose hospital for prevalent pathologies. Objective: To show the comprehensive minimally invasive surgical management of biliary pathology (laparoscopic, endoscopic, percutaneous, and combined), with full effect of the CMA at this time of the Pandemic, during the period from March 20 to May 29, 2020. **Material and Methods:** Descriptive, prospective, cross-sectional study of biliary surgical pathology for those who underwent Epidemiological Screening, preoperative examinations, if necessary, a Computed Tomography of the Thorax; with Informed Consent. **Results:** In the period studied, 51 bile duct problems were performed in the context of the pandemic; the approach routes of choice were of four types, according to the order of frequency: laparoscopic 65%, combined 25%, endoscopic 8% and percutaneous 2%, with the flexibility of CMA (Major Ambulatory Surgery) performed 20% and 80% with hospitalization, of which they had an average of one and a half days of postoperative stay. **Conclusion:** The appearance of the Pandemic gave us the opportunity to incorporate new minimally invasive techniques and strengthen the CMA. In order to carry out this work, it is necessary to prioritize safety in the work environment and patient care.

Keywords: Bile Ducts, Pandemic, General Surgery, Hospital Restructuring.

INTRODUCCIÓN

A principios de Diciembre del 2019 se identificaron los primeros casos de neumonía de origen desconocido en Wuhan, capital de Hubei, provincia de China. El 7 de enero de 2020 un nuevo coronavirus, el coronavirus 2 del síndrome respiratorio agudo severo, fue identificado como el organismo causal ⁽¹⁾. Las características clínicas de los 41 pacientes confirmados inicialmente por SARVS- Cov-2, incluyeron enfermedad del tracto respiratorio inferior, tos seca, disnea acompañada de fiebre ^(2,3).

La rápida diseminación de esta enfermedad llevó a la OMS (Organización Mundial de la Salud) a declarar Emergencia Sanitaria, lo que produjo que se endurecieran las medidas de circulación interna y el ingreso de extranjeros y ciudadanos que se encontraban en el exterior de su correspondiente país ^(1;4).

Hasta la redacción de este artículo (29 de Mayo del 2020), las cifras publicadas a nivel mundial resultan más de 4 millones de infectados, 360 mil muertes y más 135 mil recuperados, datos suministrados por más de dos docenas de países que reportaron casos ⁽⁴⁾.

En Latinoamérica se reportó el primer caso el 26 de Febrero en Sao Paulo, Brasil, teniendo en cuenta lo acontecido en Oriente, la mayoría de los países de la región decidieron implementar medidas de Cuarenta Social Total, para prevenir la diseminación del virus, como así también adecuar los Servicios de Salud ⁽⁵⁾.

En Argentina, el primer caso confirmado fue el 3 de Marzo; siendo a partir del 20 de Marzo, la aplicación del Aislamiento Social Preventivo y Obligatorio, por Decreto de Necesidad y Urgencia N° 297/2020 ⁽⁶⁾. En Tucumán, el Ejecutivo provincial, siguió los lineamientos emanados de la Nación, estableciendo el cierre de fronteras terrestre y aéreas, recibiendo solamente a sus ciudadanos que provenían del extranjero y a los cientos de trabajadores golondrina que volvían de otras provincias, los cuales fueron aislados, protegidos y controlados, impidiendo la circulación del virus; a 70 días de la cuarentena se confirmaron 48 pacientes, 4 Óbitos, 2 con tratamiento domiciliario, 8 internados y 34 de alta ⁽⁷⁾. Por lo cual la provincia, entró en la Fase 4 del Plan Nacional, con flexibilización, en la llamada Cuarentena Administrada.

Para adaptarse a esta realidad el Sistema Provincial de Salud registró un Plan de ordenamiento que contó con el apoyo de todos sus integrantes. Las acciones que se tomaron consistió en la reestructuración del funcionamiento de los hospitales, estableciendo que:

- Hospital Centro de Salud: Referente de COVID-19, en 2° y 3° nivel de atención (internación y terapia intensiva).
- Hospital del Este: segundo nodo de atención
- Hospital Ángel Padilla: nodo de atención en Emergencia y Trauma.
- Instituto de Maternidad y Hospital de Niños: con tareas monovalentes.
- Hospital de Día Néstor Kirchner: suspendiendo su actividad como unidad independiente de CMA (Cirugía Mayor Ambulatoria), quedado como Laboratorio Central de Referencia de COVID-19
- Hospital Avellaneda, como único Hospital polivalente de la Capital para patologías prevalentes.

En nuestro Hospital para poder realizar estas intervenciones, se conformó el Comité de Emergencia, multidisciplinario, donde estableció comenzar con capacitación de Intubación, Manejo de la Vía Aérea, Acceso Venoso Central, destinados a todos los niveles de atención.

Se establecieron medidas de seguridad para todos los miembros del hospital, priorizando la protección del personal como del paciente. Cuadro N1

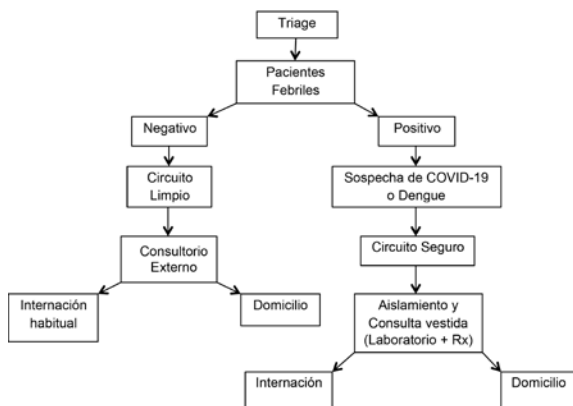
Cuadro N1: Medidas de seguridad emanadas por el Hospital para todo el personal

Medidas de Seguridad
Limpieza protocolizada (espacios comunes, consultorio, sala de internación, quirófanos)
Colocación y retirada de Elementos de Protección Personal (EPP)
Nivel de seguridad para EPP: -1: antiparras, cofia, barbijo quirúrgico común, camisolín, guantes látex y botas -2: antiparras, máscara facial, cofia, barbijo quirúrgico, camisolín hidrorrepelente, guantes látex y botas -3: máscara facial, antiparras, barbijo N 95, camisolín hidrorrepelente, guantes látex y botas
Circuitos de circulación
Traslado de pacientes.
Conformación de equipos de trabajo de acuerdo al nivel de atención.

Se instauró un Circuito de Circulación, que comienza con un Triage, basado en un interrogatorio (check list), realizado en guardia por el personal de enfermería, donde discriminan al paciente sospechoso de COVID-19 o con episodios de febriles en los últimos 14 días, es este caso se debe hacer el diagnóstico diferencial entre otra patología prevalente, el Dengue. En caso de confirmarse la infección viral este paciente debe seguir un Circuito seguro, con el respectivo aislamiento y la consulta vestida. Dependiendo la gravedad clínica puede ser internado para su seguimiento o la derivación a su domicilio para los posteriores controles.

En el paciente que se descartó dicha infección, puede transitar por un Circuito limpio, donde pasa a consultorio externo, con una previa evaluación se determina la internación o no del paciente. Esquema N1

Esquema N1: Circuito de Circulación del paciente al ingresar al Hospital de Clínicas Pte. Nicolás Avellaneda.



Si la consulta externa es de un paciente quirúrgico, y se decide su internación, para posterior intervención, la misma debe ser indispensable e impostergable, ya que su suspensión pondría en peligro la vida del paciente o provocaría secuelas. De elección que no precisen el ingreso a UTI (Unidad de Terapia Intensiva) luego de la cirugía.

Se realizan los estudios del Preoperatorio habituales: Radiografía de Tórax y ante alguna duda Tomografía Computada (TC), ya que solo se realiza proteína C reactiva (PCR) a casos sospechosos. Recalamos que no tenemos circulación comunitaria en la provincia y por lo tanto no realizamos PCR en asintomáticos ^(8,9).

Internado el paciente, las visitas quedarán suspendidas, solo se permitirá un acompañante mayor de edad. Se le realizará un Cribado epidemiológico diario y Consentimiento Informado firmado por el paciente. En todo el Circuito el paciente debe contar con el barbijo en forma permanente ⁽⁸⁾.

Siguiendo las directivas locales como así también las emanadas por la Asociación Argentina de Cirugía, solo se operaban Urgencias y Patologías Oncológicas impostergables ⁽¹⁰⁾.

Entonces ¿Qué operar? Tenemos pocos casos en la provincia y sin circulación comunitaria, por lo que solicitamos ampliar las indicaciones quirúrgicas, siguiendo la presente lógica:

A- Urgencia Electiva: paciente sintomático, debe ser resuelto dentro de la semana de ingresado.

B- Electiva Esencial: paciente que debe ser resuelto dentro del mes del diagnóstico y se incluyen pacientes oncológicos.

C- Electiva Discrecional: cuya resolución puede postergarse más de un mes.

¿Cómo Operar? Con cirugías mininvasivas (laparoscopia, endoscopia, percutánea y la combinación de estas). De esta forma se disminuye al máximo la estancia hospitalaria, por lo que se considera la plena vigencia de la CMA.

A estas intervenciones se las realiza en un quirófano seguro, que cuenta con aire acondicionado central que nos permite circulación y filtrado de aire, con presión negativa. Considerar la menor circulación de personal posible, con los cirujanos más experimentados; en el equipo quirúrgico debe haber un líder que inspire confianza en el momento de crisis ^(11,12).

El anestesiólogo debe contar con el EPP3, la estación de anestesia debe estar cubierta por un plástico de protección. El personal quirúrgico con el equipo habitual, aunque la mayoría utiliza protección ocular ^(8;11).

El paciente debe permanecer el menor tiempo en el quirófano, se recomienda evitar el Trendelenburg prolongado. Se evalúa previa a la cirugía la técnica quirúrgica. El objetivo debe ser lograr el mayor beneficio con el menor gesto quirúrgico y elegir aquel que origine menos complicaciones posoperatorias ⁽¹⁰⁾.

Para evitar la aerosolización, se realiza el neumoperitoneo a la menor presión posible, incisiones pequeñas para los trocares, por uno de los puertos de 5 mm de diámetro se evacua el neumo y humo en aspiración bajo trampa de agua, extracción de pieza en bolsa y con previo evacuado total del neumo y egreso del paciente con barbijo ⁽¹⁰⁾.

OBJETIVO

Mostrar el manejo quirúrgico integral mininvasivo de la patología biliar (laparoscópico, endoscópico, percutáneo y combinado), con plena vigencia de la CMA en este momento de Pandemia, durante el periodo del 20 de Marzo al 29 de Mayo del 2020, en el

Servicio de Cirugía General del Hospital de Clínicas Pte. Nicolás Avellaneda, Tucumán, Argentina.

MATERIAL Y MÉTODO

Se realizó un estudio descriptivo, prospectivo de corte transversal. Para la recolección de datos se utilizó el Libro de Quirófano donde se registraron todas las intervenciones quirúrgicas realizadas en el periodo del 20 de Marzo al 29 de Mayo del año 2020.

Criterios de Inclusión: pacientes con patología quirúrgica biliar que cumplen los requisitos de cirugía y a quienes se le realizó Cribado Epidemiológico, exámenes preoperatorios, de ser necesaria una TC de Tórax; con Consentimiento Informado. **Criterios de Exclusión:** pacientes con otra patología quirúrgica no biliar.

Se respetó la Ética en todo momento, para ello se solicitó la autorización previa a los directivos del Hospital, así como del Jefe del Departamento de Cirugía, asegurando la confidencialidad y anonimato de los datos recabados del libro de quirófano.

Luego de haber obtenido las autorizaciones correspondientes, para la recolección de datos, se revisó el libro de quirófano donde se especifica el tipo de intervención y en caso de cumplir con los criterios del estudio, se confirmaron es-

tos datos con el Software aportado por Estadística del Hospital.

Se estudiaron las siguientes variables: patología biliar, vía de abordaje laparoscópico, endoscópico, percutáneo y combinado (conjunto de las intervenciones nombradas previamente como laparoendoscópico, Técnica de Rendez Vous).

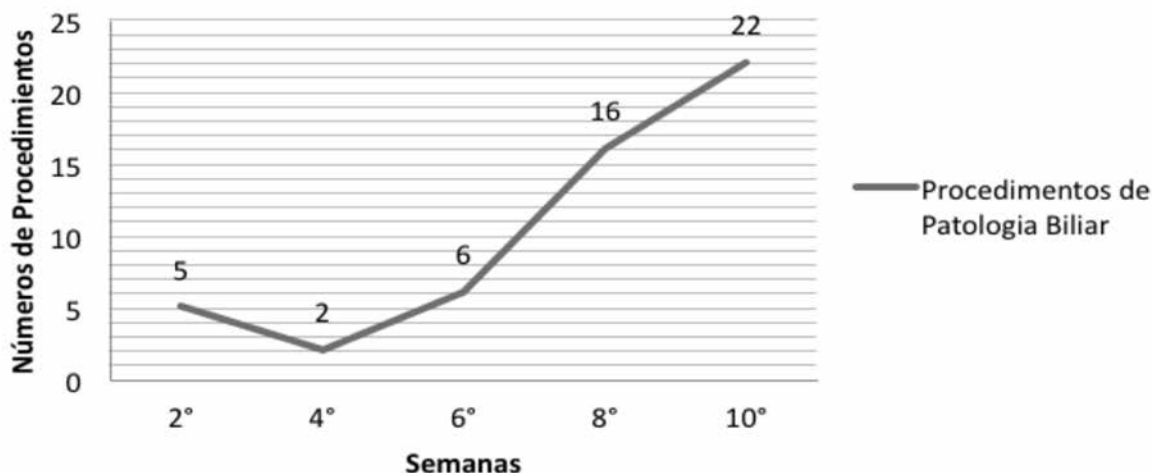
Para el proceso de análisis e interpretación de los datos se procedió a la sistematización de la información, mediante la utilización de la hoja de cálculo de Microsoft Excel 2010. Se realizó un análisis descriptivo de las variables bajo estudio.

RESULTADOS

En el Servicio de Cirugía General, se realizaron 51 intervenciones de patología biliar, en diez semanas de estudio, desde el 20 de Marzo al 29 de Mayo del 2020, en el contexto de la pandemia por COVID-19, observándose un aumento exponencial en el número de procedimientos del grafico lineal. Figura N1

De los 51 procedimientos de la patología biliar, la vía de abordaje de elección fueron de cuatros tipos, según el orden de frecuencia en laparoscópico 33 (65%) con IC 95% [11.9%-77%], combinado 13 (25%) con IC 95% [10.8%-36%], endoscópico 4 (8%) con IC 95% [6.8%-8%], y percutáneo 1 (2%) con IC 95% [3.5%-5%]. Cuadro N2

Figura N1: Total de procedimientos de Patología Biliar, en el Servicio de Cirugía General del Hospital de Clínicas Pte. Nicolás Avellaneda, desde el 20 de Marzo al 29 de Mayo del 2020, en el contexto de la pandemia por COVID-19.



Cuadro N2: Distribución de frecuencia según Tipo de abordaje de la Patología Biliar, en el periodo del 20 de Marzo al 29 de Mayo del 2020, en el contexto de la Pandemia por COVID-19.

	n=51	%	Intervalo de Confianza del 95%
Laparoscópico	33	65	[11.9%-77%]
Endoscópico	4	8	[6.8%-8%]
Percutáneo	1	2	[3.5%-5%]
Combinado	13	25	[10.8%-36%]

A los 51 pacientes que se le realizó procedimientos biliares, en 10 (20%) con la modalidad de CMA y 41 (80%) con internación hospitalaria, de los cuales tuvieron un promedio de un día y medio (1.5) de estancia postoperatoria.

DISCUSIÓN

Debido a la situación epidemiológica, es necesario contar con un Servicio de Cirugía General que pueda adaptarse a la realidad de su población. Es por ello que el Servicio reestructuró su funcionamiento para responder a la patología quirúrgica prevalente. Con respecto a si se debe realizar intervenciones en esta situación infectológica, una revisión sistemática de la Universidad de Brasil, refiere que en la mayoría de los artículos analizados, un poco menos de la mitad recomiendan suspender las cirugías programadas, seguida de considerar la selección de intervenciones, según la etapa epidemiológica que se esté cursando en su comunidad⁽¹¹⁾.

En estas seis semana de estudio en contexto de la Pandemia de observó un aumento del 52% de las intervenciones en la vía biliar, demostrando que es una de las principales patologías quirúrgicas prevalentes a resolver. Según la publicación de Palermo y col. refieren que la prevalencia de litiasis vesicular en el área metropolitana de Buenos Aires, Argentina, es de una 22%, complicándose el 10% de estas⁽¹³⁾. No se encontraron artículos que hagan referencia a la prevalencia en el noroeste del país.

Debido al Decreto de Cuarentena obligatoria, las intervenciones quirúrgica sufrieron un freno en sus actividades, ya que se debió adecuar a la realidad infectológica de la pro-

vincia, quedando el Servicio a respuesta de la patología biliar, por esta razón a los pocos días, se comenzó a recibir y operar a pacientes evolucionados derivados de otros centros; con colecistitis aguda, infectados e ictericos, que nos ponían al frente de cirugías dificultosas.

Se concluyó que había una demanda contenida de pacientes sintomáticos, por lo que se debía ampliar la oferta prestacional, para poder crecer y evolucionar. Por lo cual se solicitó el traslado desde otro hospital de la capital, de un medico gastroenterólogo capacitado con la terapéutica endoscópica biliar.

En estas condiciones, el Servicio estaba preparado para recibir a pacientes de otros hospitales y realizar el tratamiento integral de la patología biliar. Por lo cual en el periodo del estudio, se pudo observar un aumento del 52% de las intervenciones, lo que demuestra que a pesar de la condición infectológica presentes, el Servicio presentó un abanico de oportunidades para abordar este tipo de patología, permitiendo el desarrollo del mismo, al ampliar la oferta prestacional en una población donde no se demostró infección comunitaria por COVID-19. Resultados opuestos fueron descriptos por otro hospital, donde refieren que disminuyeron los procedimientos mininvasivos a pesar de no tener circulación viral en su área de trabajo⁽¹⁴⁾.

La vía de abordaje más frecuente fue la laparoscópica, representada por la colecistectomía laparoscópica en un 65%, la misma se realizó con indicación quirúrgica indispensable y selección precisa del paciente. Para evitar la aerosolización, se efectuó un neumoperitoneo a la mínima presión posible, con un sistema de trampa bajo agua y una incisión lo más pequeña posible para los trocares. Con respecto a la difusión del virus, la mayoría de las recomendaciones fueron dadas por las Sociedades Científicas mediante webinar, debido a la escasa evidencia reportada, ya que nos enfrentamos a un germen desconocido⁽¹⁵⁻¹⁷⁾. La Sociedad Americana de Cirujanos Gastrointestinales y Endoscópicos (SAGES), recomienda realizar esta intervención solo antes casos de urgencias, con filtro de CO₂, y el menor personal con la adecuada protección⁽¹⁸⁾.

El segundo abordaje en frecuencia es el combinado, representado por un 25%, incluye a

la técnica de Rendez Vous (laparoendoscópico) (Figura 2), es de elección para el tratamiento de la litiasis vesicular y coledociana, con vía biliar fina, debido a que se realiza en un solo tiempo quirúrgico; está asociado con menos efectos adversos, menor malestar para el paciente y una estancia hospitalaria más corta; con esta modalidad pudimos resolver tres pacientes pediátricos en estas condiciones. Para poder desarrollarla se tomaron las precauciones descriptas previamente, tanto en la parte laparoscópica como endoscópica. Estas medidas son concordantes a la que recomienda la SAGES y la Asociación Europea de Cirujanos Endoscopistas (EAES), en cuanto a la filtración y ventilación del quirófano, EPP apropiado y dispositivos de evacuación de humo con un sistema de succión y filtración⁽¹⁹⁾.

El manejo endoscópico fue realizado en un 8%, entre las que se puede mencionar la esfinterotomía y CPRE (Colangiopancreatografía retrógrada endoscópica). La endoscopia digestiva alta es un procedimiento de riesgo alto, debido a la presencia del SARS-CoV-2 en secreciones, por lo que se consideró estrictos EPP durante el procedimiento, con el correcto reprocesamiento y desinfección, para minimiza el riesgo de transmisión de cualquier tipo de virus de todo el material usado. Estas medidas fueron reforzadas por varias sociedades que recomiendan, empezar a realizarla en forma escalonada, como la SEED (Sociedad Española de Endoscopia

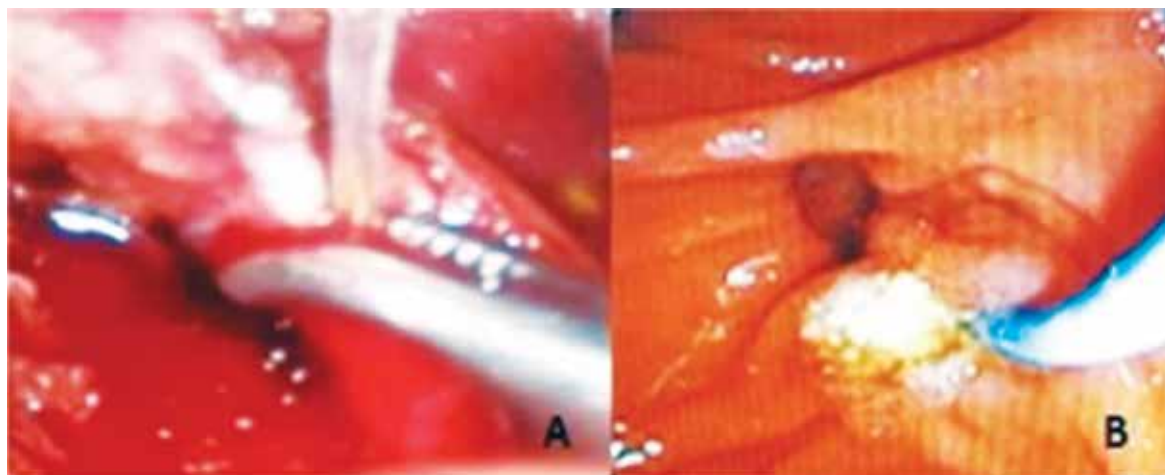
Digestiva) y la AEG (Asociación Española de Gastroenterología)⁽²⁰⁾.

El tratamiento percutáneo de la vía biliar fue realizado en un 2%, es una alternativa eficaz para mejorar las condiciones del paciente icterico antes de otro procedimiento invasivo mayor (Figura 3). Según el Colegio Americano de Cirugía ante una colecistitis aguda, grado III de Tokio, se la debe someter a una colecistectomía percutánea o abierta, dependiendo de los recursos hospitalarios dis-

Figura N3: Colecistectomía Percutánea



Figura N2: Técnica de Rendez Vous. A: Introducción de guía hidrófila por catéter transcístico, primera etapa. B: Lito extraído por balón, posterior a esfinterotomía endoscópica, última etapa.



ponibles ⁽²¹⁾. Al inicio de la Pandemia la Fundación Daicim, en su recomendación de Cirugía Percutánea y COVID-19, indica que antes un caso positivo o sospechoso se debe aplazar el procedimiento al menos que sea estrictamente necesario, evitar la anestesia general y realizarlo al lado de la cama del paciente, sugiere que la colecistectomía percutánea es una alternativa a la cirugía laparoscópica o abierta para evitar la aerosolización que generan estos abordajes, esto debe ser evaluado según la fase de alerta de cada Institución ⁽²²⁾.

El ingreso hospitalario de aquellos pacientes quirúrgicos que no demuestren estar infectados por COVID-19, implica un mayor gasto hospitalario por la estancia que debe afrontar, con la consecuente disminución de cama disponible y un aumento del riesgo de infección nosocomial. Por lo que es imprescindible que el Servicio de Cirugía General cuente con la modalidad de CMA, para evitar ingresos innecesarios, que resulten adversos para el paciente y de esta forma administrar los recursos en forma adecuada en esta pandemia ⁽²³⁻²⁵⁾. Debido a esto, el Servicio continuó con su labor en la Unidad de CMA, formada desde el 2010; en el periodo estudiado se realizaron el 20% de las intervenciones bajo esta modalidad, siendo la colecistectomía laparoscópica la patología más indicada para que cumpla este circuito, para lo cual se le aplicaron los criterios de selección y se descartó infección viral previa. En épocas normales nuestro Servicio tiene un Índice de Ambulatorización del 63%.

CONCLUSIÓN

La aparición de la Pandemia nos dio la oportunidad de incorporar nuevas técnicas mínimamente invasivas y fortalecer la CMA. Para poder realizar esta labor, es necesario priorizar la seguridad en el entorno de trabajo y la atención de los pacientes, para evitar lo que se denominan segundas y terceras víctimas de la pandemia.

Tal vez debemos aprender a convivir con este virus, como convivimos con el HIV, HVP y Hepatitis; ya que nos debemos plantear si esta será la “nueva normalidad”.

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Conflicto de Interés

Los autores declaran no tener conflicto de interés.

RESUMEN

Antecedentes: La rápida diseminación mundial de la enfermedad COVID-19 llevó a declarar la Emergencia Sanitaria, en Argentina se decretó el Aislamiento Social Preventivo y Obligatorio el 20 de Marzo, siguiendo con estos lineamientos Tucumán tuvo que adaptarse reestructurando su Sistema Provincial de Salud, quedando el Hospital de Clínicas Pte. Nicolás Avellaneda, como único hospital polivalente para patologías prevalentes. **Objetivo:** Mostrar el manejo quirúrgico integral mininvasivo de la patología biliar (laparoscópico, endoscópico, percutáneo y combinado), con plena vigencia de la CMA en este momento de Pandemia, durante el periodo del 20 de Marzo al 29 de Mayo del 2020. **Material y métodos:** Estudio descriptivo, prospectivo de corte transversal, de la patología quirúrgica biliar a quienes se le realizó Cribado Epidemiológico, exámenes preoperatorios, de ser necesaria una Tomografía Computada de Tórax; con Consentimiento Informado. **Resultados:** En el periodo estudiado, en el contexto de la pandemia se realizaron 51 intervenciones de la vía biliar; las vías de abordaje de elección fueron de cuatro tipos, según el orden de frecuencia: laparoscópico 65%, combinado 25%, endoscópico 8% y percutáneo 2%, con la modalidad de CMA (Cirugía Mayor Ambulatoria) se realizó 20% y 80% con internación hospitalaria, de los cuales tuvieron un promedio de un día y medio de estadía postoperatorio. **Conclusión:** La aparición de la Pandemia nos dió la oportunidad de incorporar nuevas técnicas mininvasivas y fortalecer la CMA. Para poder realizar esta labor, es necesario priorizar la seguridad en el entorno de trabajo y la atención de los pacientes. **Palabras claves:** Vía biliar, Pandemia, cirugía, reestructuración hospitalaria.

Hemangioma de colon

Descripción de caso y revisión de la literatura

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ABSTRACT

Keywords: hemangioma. Cavernous hemangioma. Colon hemangioma.

The hemangioma of the colon and rectum is a rare entity. The cavernous type is even more rare, so there are few reports of this pathology. It mainly affects the rectum and the sigmoid, and the most common presentation is painless proctorrhagia in 90% of cases. More frequent in young adults. This entity for its diagnosis requires high suspicion and the realization of the pertinent studies since it is usually confused with more common pathologies.

In this review we present the case of a 58-year-old male patient with a cavernous hemangioma of the transverse colon that initially manifested as hematochezia associated with asthenia. After performing complementary studies, surgical behavior is decided. Transverse colon resection was performed with good postoperative evolution.

The result of pathological anatomy informs us Cavernous hemangioma of transverse colon.

INTRODUCCIÓN

Los hemangiomas de colon y recto son entidades poco frecuentes, descritas inicialmente desde 1839 por Phillips;¹⁻⁴ desde entonces existen múltiples reportes de esta patología. En 1932, Bensaude informó sobre 15 hemangiomas cavernosos que involucraban ano, recto o sigmoideas.⁴ Para 1973, Head y cols., en una extensa revisión de la literatura mundial,¹ reportaron 186 casos de los cuales sólo 58 correspondían a hemangiomas confinados al colon intraabdominal. Específicamente hablando del hemangioma cavernoso del colon, con base en la clasificación de Obendorfer-Kaijser, existen aún menos casos informados.^{1,4} La edad de presentación para esta patología suele estar entre los 5 y los 25 años, la principal manifestación es la hemorragia digestiva baja, indolora, que puede llegar a ser masiva.² El tratamiento de elección que ofrece el control absoluto de la sintomatología es la resección quirúrgica completa, de la cual se han descrito múltiples procedimientos según la localización específica del tumor.^{2,3,5} Su diagnóstico implica un alto índice de sospecha y la exclusión de otras entidades mas frecuentes.⁶

Presentación del caso

Paciente masculino, 58 años de edad, con antecedentes de constipación crónica y episodio de hemorragia digestiva alta por úlcera gástrica hace 15 años atrás, que consulta por astenia y episodio de hematoquecia de 3 meses de evolución, que en la última semana agrega dolor abdominal de tipo cólico asociado a aumento del sangrado bajo.

Al examen físico se constata mucosas pálidas y secas, signos vitales dentro de los parámetros normales. Abdomen blando, depresible, distendido con accesos de dolor tipo cólico, RHA aumentados. En el tacto rectal se evidencia materia fecal con trazos de sangre rojo rutilante. Diuresis conservada.

Se realiza Colonoscopia (figura 1), la cual informa en colon transverso área de 12 cm con presencia de innumerables elementos vasculares, como varicosidades o golfos vasculares.

Se solicita colon por enema (figura 2) que muestra una imagen patológica a nivel de colon transverso. En la Tomografía Axial Computarizada de abdomen con y sin contraste (figura 3) se constata proceso exofítico en colon transverso y calcificaciones, sin otros datos positivos.

Figura 1. Colonoscopia

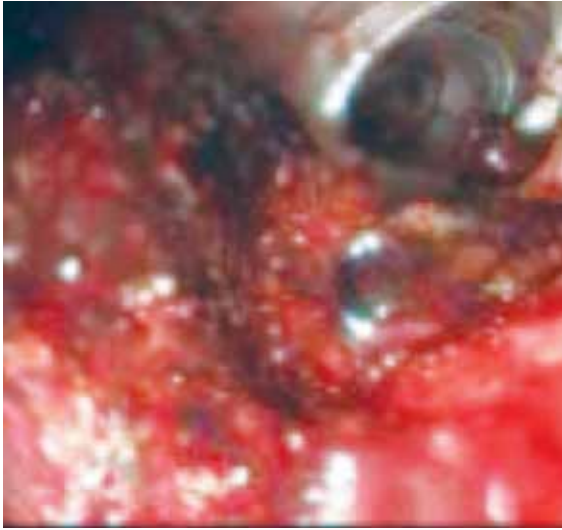


Figura 2. Colon por enema con imagen patológica en 1/3 proximal de colon transverso.

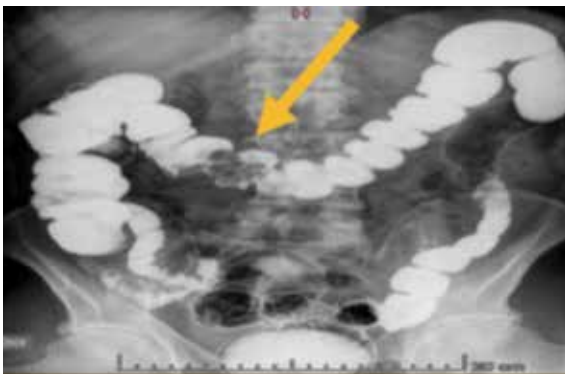
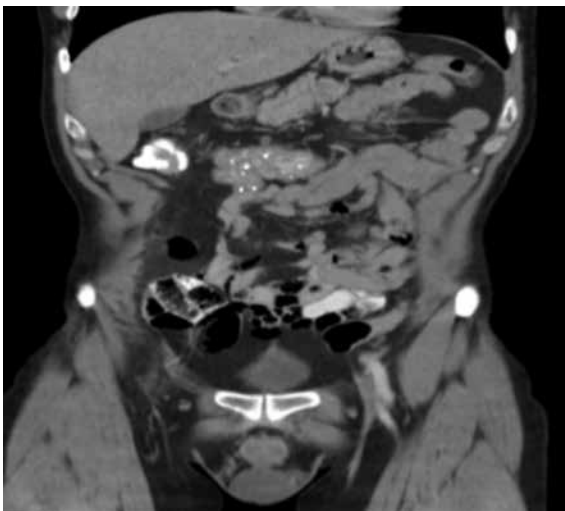


Figura 3. TAC de abdomen con contraste. Calcificaciones.



Se decide realizar en forma convencional colectomía segmentaria de colon transverso (figura 4) con colo-colo anastomosis con sutura mecànica lineal.

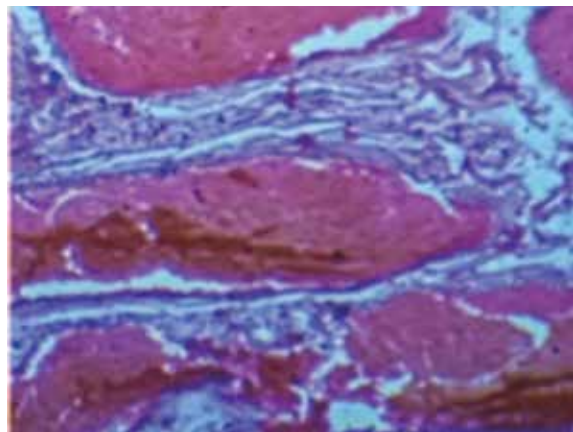
Figura 4. Pieza quirùrgica



La pieza operatoria recibió el informe anatopatológico (figura 6) de hemangioma cavernoso de colon transverso.

Paciente con buena evolución postoperatoria. Alta sanatorial al 5to dia postquirùrgico.

Figura 5. Hemangioma cavernoso de colon transverso. Lesión hamartomatosa de origen embrionario.



Discusión

Los hemangiomas son lesiones vasculares congénitas que afectan generalmente piel, hígado,

páncreas y tracto gastrointestinal. Si bien su localización en colon es poco frecuente, se los considera como la segunda neoplasia vascular a nivel colorrectal y la región más afectada es a nivel de rectosigmoides en el 60-90% de los casos.

Se manifiesta desde edades tempranas, entre los 5 y 25 años de edad; existe una frecuencia relativa mayor en hombres comparado a las mujeres, con una relación 1.5:1. La incidencia es del 0.06%, es decir 1 por cada 1,500 pacientes.

Su origen se cree es a partir de restos embrionarios de tejido mesodérmico. La transformación maligna es rara. Pueden ocurrir como lesiones solitarias, múltiples lesiones limitadas al colon o como parte de una enfermedad difusa.

Los vasos sanguíneos que lo componen están dilatados en el segmento gastrointestinal afectado y al visualizarlos con una tinción de hematoxilina y eosina se encuentran espacios vasculares dilatados a través de endotelio maduro en mucosa y submucosa, además de la formación de trombos organizados dentro de la luz, formando papilas llamadas "hiperplasia endotelial de Masson" o calcificación distrófica, que es conocida como flebolitos. En otros casos, cuando tiene un componente infiltrativo, se extiende a todo el espesor de la pared intestinal llegando hasta estructuras pélvicas. Por lo general, contienen mayor número de fibras de músculo liso que las lesiones capilares. Con ayuda de la inmunohistoquímica se encuentra que es positivo a CD31 por su origen vascular y CD34 por ser de origen mesénquima.

Existen múltiples clasificaciones, pero a fines prácticos se los pueden clasificar en dos tipos:

A) Tipos benignos:

1. Hemangioma capilar (simple): La mayoría son únicos, esféricos e intraluminales. Conformados por vasos de paredes delgadas. Conforman el 6% de los hemangiomas intestinales.
2. Hemangioma cavernoso: Grande, conformado por vasos con paredes delgadas con tejido conectivo escaso en el estroma. Corresponde a 25% de los hemangiomas intestinales. Dentro de estos se diferencian 2 tipos:

- Circunscrito (único).

- Expansivo difuso (múltiple).

3. Hemangioma mixto (capilar-cavernoso).

4. Flebectasia múltiple: Multitud de nódulos pequeños, menores de 1 cm. Son lesiones cavernosas. Corresponde a 40-60% de hemangiomas intestinales. Existen 2 tipos:

- No familiar: Más frecuente.

- Hereditaria: Enfermedad de Rendu-Osler-Weber.

5. Hemangiopericitoma: Raro, frecuentemente muestra cambios malignos.

B) Tipos malignos:

1. Hemangioendotelioma: Raro

2. Hemangiopericitoma: Raro

Clínicamente, cuando presentan sintomatología, lo más frecuente es la hemorragia digestiva baja indolora, recurrente (60-90%) y, en muchas ocasiones, masiva, especialmente en el caso del hemangioma cavernoso difuso, cuya hemorragia puede llegar a ser fatal. Otros tipos de presentación incluyen oclusión intestinal parcial o completa (17-25%), tenesmo, urgencia rectal, presencia de masa abdominal, anemia, así como dolor abdominal y diarrea.

Frecuentemente suelen infradiagnosticarse o confundirlos con cuadros más prevalentes como hemorroides internos, enfermedad intestinal inflamatoria o neoplasias.

El procedimiento diagnóstico de elección es la video colonoscopia, la cual da unas imágenes típicas de mamelones difusos, violáceos, gris azulado, muy blando y depresibles con el aire. Además, permite establecer la extensión proximal y distal del hemangioma para planear el segmento a resear.

En la radiografía directa de abdomen se observan calcificaciones secundarias a microtrombosis de los vasos del hemangioma, causados por inflamación perivascular y estasis del flujo sanguíneo; estas calcificaciones son llamados flebolitos. Su presencia es un signo patognomónico en esta patología, donde se pueden encontrar entre un 26-50%

En los estudios con bario se puede observar un estrechamiento de la luz del colon que no se modifica con la insuflación.

Las imágenes de tomografía computarizada con contraste oral e intravenoso y resonancia magnética muestran engrosamiento de la pared del segmento afectado, vasos colónicos dilatados y la presencia de flebolitos a nivel intramural o extraintestinal abarcando el mesocolon. Al tratarse de una patología vascular existe reforzamiento de la lesión con el empleo del medio de contraste intravenoso yodado. Además, ponen en manifiesto las relaciones con las estructuras adyacentes; por lo tanto son consideradas de importancia antes de la resolución quirúrgica.

La angiografía mesentérica es útil para identificar el sitio preciso de hemorragia, pero rara vez es necesaria para el diagnóstico.

El tratamiento de un hemangioma intestinal sintomático es primariamente quirúrgico, Sin embargo, en los casos en que las malformaciones son pequeñas o si la crugía esta contraindicada, puede emplearse tratamiento médico por vía endoscópica. Dentro de estos pueden abarcar desde la escleroterapia, crioterapia, aplicación de argón, embolización por angiografía y ligadura de vasos mesentéricos, aunque en estos casos sólo se reporta mejoría temporal; y/o ser extirpadas submucosamente con preservación de la seromuscular.

La resección quirúrgica es el tratamiento de elección para controlar el sangrado y curar completamente la enfermedad. De acuerdo a su localización y grado de afección suele variar el procedimiento.

Conflicto de interes

Nuestra revisión no presenta conflicto de interés.

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RESUMEN

Palabras clave: hemangioma. Hemangioma cavernoso. Hemangioma de colon.

El hemangioma de colon y recto es una entidad poco frecuente. El tipo cavernoso, es aún más raro por lo que existen pocos reportes de esta patología. Afecta mayormente al recto y al sigmoides, y el modo de presentación más común es la proctorragia indolora en el 90% de los casos. Más frecuente en adultos jóvenes. Esta entidad para su diagnóstico requiere alta sospecha y la realización de los estudios pertinentes ya que suele confundírsela con patologías más comunes. En esta revisión se presenta el caso de un paciente masculino de 58 años con un hemangioma cavernoso de colon transverso que se manifestó inicialmente como hematoquecia asociada a astenia. Luego de realizar estudios complementarios, se decide conducta quirúrgica. Se realizó resección de colon transverso con buena evolución postoperatoria. El resultado de anatomía patológica nos informa Hemangioma Cavernoso de colon transverso.

Cephalic Duodenopancreatic Resection: Pathology, Complications, Follow-up (Part II)

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SUMMARY

Background: Cephalic duodenopancreatectomy (CDP) (pancreaticoduodenectomy of the head of the pancreas) is the surgical option accepted as the procedure of choice for the management of both malignant and benignant tumours of the duodenal-pancreatic biliary confluence.

Setting: National Clinical Hospital and private practice.

Desing: Protocolled and prospective study.

Methods: Between December 2000 through December 2014, 96 CDP have been operated upon: 39 cancers of the head of the pancreas, 19 cancers of the papilla, 9 cancers of the duodenum, 10 of the distal common bile ducts, 5 cystic tumours of the pancreas, 4 chronic pancreatitis, 3 functioning pancreas, 3 non-functioning tumours, and finally 3 tumours of different etiologies: 1 GIST of duodenum, 1 metastasis from a renal cancer, and 1 colon cancer of the hepatic flexure who invaded the duodenum.

Results: Pancreatic fistulas were observed in 32 patients. With reference to gastric emptying it was present in 19 patients, and finally in 5 patients an intra peritoneal haemorrhage was present which were re-intervened, and one of them died. On the other hand, 11 abdominal collections were present, of whom 4 patients were re-operated, and to the remaining 7, a drainage was placed in the collection. Four patients were re-operated with evisceration.

Conclusions: The results of our study support the concept that surgeons with low volume of annual CDP, but with strict training in institutions with adequate infrastructure and a multidisciplinary team, can obtain also good results.

Key Words: Pancreatoduodenectomy Cephalic. Anatomic Pathology. Reoperations. Follow-up.

BACKGROUND

Advances in recent decades in the massive form of diagnostic techniques for images, a better understanding of pancreatic diseases and management pre, intra, and postoperative patients has influenced in some centres of reference (1) (2), a significant reduction of mortality and an increase in the survival of the cephalic pancreatoduodenectomy for the treatment of malignant and benign tumours of the bilio-duodeno-pancreatic confluence, and today this surgery can be performed with an acceptable morbidity and mortality (3).

One of the controversial aspects of the pancreatic resection from the ampullar region of tumours has been the extent, along with the surrounding connective tissue and lymph nodes to be removed (4). Evidence suggests that lymph node metastasis

is the first event in pancreatic cancer progression and therefore the presence of tumours in lymphatic cells, represents one of the negative prognostic factors, related to the patient's outcomes (5) (6).

The objective of this second study was to evaluate the evolution of pathologies, complications, and follow-up of 96 consecutive cephalic pancreatoduodenectomies performed by the same surgical team.

METHODS:

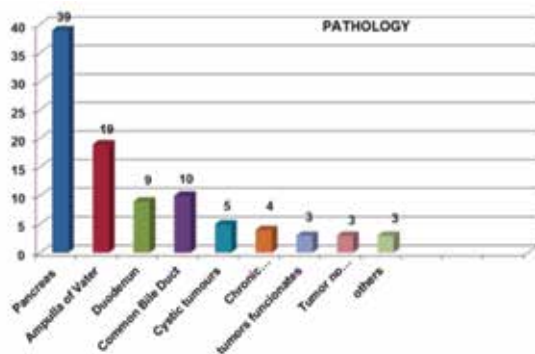
Between December 2000 through December 2014, 96 consecutive CDP were performed by a surgical team, both from the hospital level as from the private activity (service of General Surgery of the HNC, guard service Central of the HNC and

Private Clinic Caraffa), according to a protocol, and prospectively. Fifty-four male patients (51.84%) and 42 females (40.32%), whose ages ranged from 27 to 79 years of age (average 59 years) (7), were operated on.

The indications for surgery were: 39 cancers of the head of the pancreas, 19 cancers of the papilla, 9 cancers of duodenum, 10 of the distal common bile duct, 5 cystic tumours of the pancreas, 4 chronic pancreatitis, 3 functioning pancreas, 3 non-functioning tumours, and finally 3 tumours of different etiologies: 1 GIST of the duodenum, 1 metastasis from a renal cancer, and 1 colon cancer of the hepatic flexure who invaded duodenum (**Table N° 1**).

The time between the onset of symptoms and the first period of consultation averaged 81 days (range 10-129 days). In relation to the same, in 89 patients a weight loss was present, which varied between 4 to 15 kg (85.44%), in 83 opportunities jaundice was presented (79.68%), in 82 cases looked for pain (78.72%), 51 (48.96%) vomiting and fever in 14 cases (13.44%) (7).

Table 1: Pathology.



All patients received an ultrasound of the abdomen, to detect the pathology, that in 80 opportunities allowed us to observe the tumour (76.80%), also in 82 cases (78.72%) it was observed a dilation of the main bile duct. In addition, a TD was performed in all patients, which demonstrated in 86 opportunities dilation of the duct of Wirsum (82.56%) and in 89 cases the dilation of the intra-hepatic bile duct as extra hepatic (85.44%). On the other hand, CPRM was performed in 49 patients (47.04%), in 41 opportunities it

was observed that dilated the Wirsum's duct (83.67%). In addition, an endoscopy (68.16%) was carried out by protocol in 71 cases, with pathology of the duodenum and papilla in 32 patients (22.72%) (7).

RESULTS

In our experience, we didn't use the percutaneous and endoscopic biliary drainage before surgery. All patients underwent a PDC (7).

Within the intraoperative findings, we must emphasize the dilatation of the common bile duct in 83 times (79.68%), the consistency of the pancreas, in 45 cases it was hard (43.20%), soft and normal without alterations in 35 opportunities (33,60%) 16 (13.44%). On the other hand, in 8 patients (7.68%) was necessary a venous resection in partial form on 6 occasions and 2 completely to carry out their anastomoses. In the intraoperative at most 6 transfusions took place. In relation to the surgical time, ranged from 4 to 7 hours (average: 5.22 hours).

Regarding to the mortality within 30 days, 5 patients (4, 80%) died, they were: 2 which had been re-intervened by intra-abdominal hemorrhage and another by intra-abdominal abscess due to a fistula pancreatic type C, then another respiratory failure and atrial fibrillation. Subsequently, 5 more patients died within 90 days (9.3%) (7).

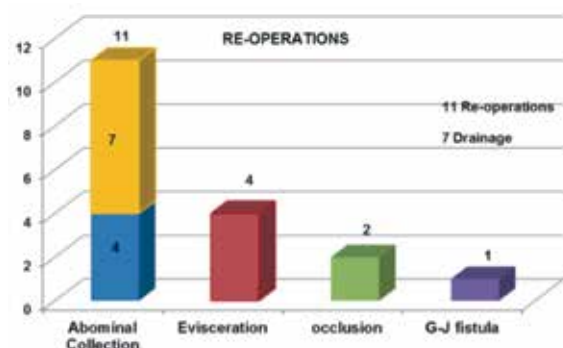
In relation to morbidity (64.32%), we divide them into clinical that were 17 patients (16.32%) and 50 patients who were surgical (48%), more than one patient suffered these two eventualities. Within the former, or systemic (3) 17 patients (16.32%), which were 3 lung disease, 6 febrile syndromes, 4 diabetes, 1 arrhythmia, 1 IAM, respiratory failure and an atrial fibrillation last two who died (7).

For surgical complications, using the definition of the international group of pancreatic surgery (ISGPF) (8) (9), we find that: pancreatic fistula was present in 32 patients (30.72%), divided into type A: in 25 cases (24%) where there was no clinical impact, type B: 4 opportunities (3.84%) and finally type C: 3 (2.88%), which one of them after being intervened. C patient died. Gastric emptying was present in

19 patients (18.24%), who had more than 10 days the SNG and finally in 5 patients (4.80%) had bleeding intra peritoneal which were re-intervened and one of them died. In addition, 8 patients had a biliary fistula (7.62%). In none of these cases patients were not re-operated, improving clinical control (7).

On the other hand, there were 11 (10.56%), abdominal collections with 4 patients (3.84%) who were re-operated, and the remaining 7 it was placed a draw in this collection (6.72%) with good clinical outcome. We operated 4 patients with evisceration (3.84%), in other 2 bowel obstructions (1.92%), which happened at 6 and 10 days respectively of his surgery and one by fistula of the gastro-yeyunal anastomosis (0.96%). Finally 10 cases of abscess of the wall (9.60%) were resolved favourably (Table N° 2).

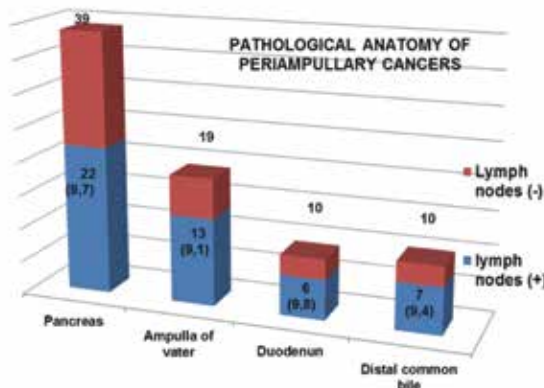
Table N° 2: Re-operations



In relation to the pathological anatomy, it must be noted that from the 39 pancreatic head adenocarcinomas, 22 possessed between 6 to 18 positive nodes in the surgical piece (mean: 9.7 + nodes), in addition to 4 venous resections without compromise in the study of carcinomatous invasion. In the 19 papilla adenocarcinomas, 13 patients were found between 5 and 18 positive nodes (average 9.1 + nodes). Regarding duodenum pathology, one was a GIST without low-grade and 9 adenocarcinomas had in 6 of them, between 6 to 15 positive nodes (average: 9.8 + nodes). In the 10 distal common bile duct adenocarcinomas, we observed in 7 positive invasion between 5 to 16 nodes (mean: 9.4 + nodes), added to 2 venous resections without

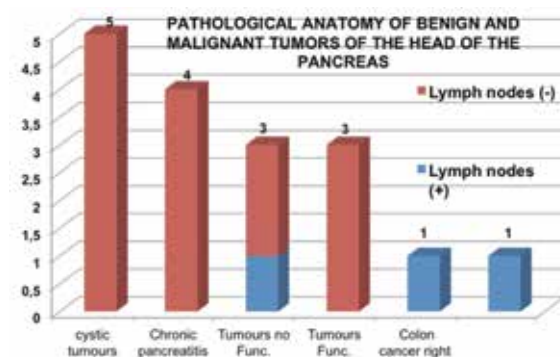
the carcinomatous commitment in the study of pathological anatomy (Table N°3).

Table N° 3: Pathological anatomy of Peri-ampullary cancer.



In cystic pancreatic tumours, 2 low-grade mucinous lesions were found, in one of which had a venous resection without pathology in that study, in 2 low-grade MMIN and finally a solid and papillary tumour of the head of the pancreas. Pathological anatomy confirmed chronic pancreatitis in 4. In neuroendocrine tumours there were 6 that confirmed in 2 a gastrinoma; in another that was an Insulinoma and in the remaining three non-functioning, there was low-grade neuroendocrine carcinoma that at that time there was also a venous resection and two functioning tumours without nodes. Finally, a right colon cancer that invaded pancreas with positive nodes, and a metastasis of a kidney tumour that had 2 positive nodes (Table N° 4).

Table N° 4: Pathological anatomy of benign and malignant tumors of the head of the pancreas.



FOLLOW UP

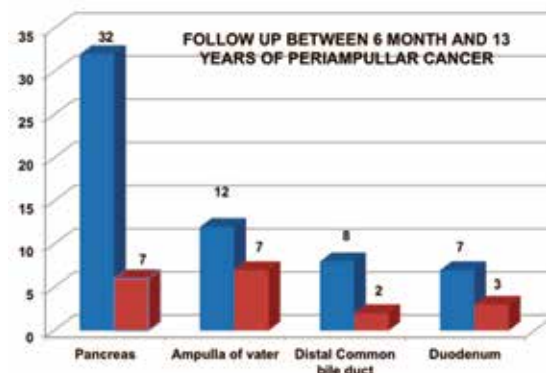
In the evolutionary control of all patients between 6 months postoperatively and 13 years, there were 12 who had an eventration (11.52%). On the other hand, in relation to the survival of the 39 patients with head cancer of the pancreas, the 22 patients with positive nodes that we analysed above died between 3 months and 36 months (**average: 15 months, 27 days**) from disease evolution. In addition to the remaining 17 without nodes between 48 to 96 months (**average: 66 months**), of these died 10 I.A.M. patients in 2 cases, arrhythmia in 2 patients, diabetes and its complications in 3, 1 case by A.V.P. and finally another by A.C.V. The rest of the patients are alive (**Table N° 5**).

Regarding the survival of the 19 patients with adenocarcinoma, of the papilla which 13 with positive nodes died, 10 which were between 7 to 48 months (**average: 15 months, 17 days**) from disease progression. Of the remaining 6 without nodes between the ages of 36 to 96 months (**average: 57 months, 33 days**), 2 died in 1 from APET, another from I.A.M. Live 3 patients with positive nodes and 4 without positive nodes. In distal Common Bile Duct cancers, 7 had positive nodes where they died between 4 and 96 months (**average: 27 months, 14 days**) from the evolution of the disease. The remaining three between 24 and 48 months (**average: 39 months 45 days**). 1 patient died from a cardiac arrhythmia (**Table N° 5**).

In relation to duodenum cancer, 6 patients with positive nodes died between 17 months and 48 months (average: 26.8 months). The remaining 4 between the remaining 60 to 72 months (average: 66 months), where the GIST duodenal tumour lives, and 2 of the duodenal adenocarcinomas and another died in the post-operation; one of the eventration operations by an APET (**Table N° 5**).

Within the cystic tumours of the pancreas two low-grade NMIP, 2 MCT also of low degree and 1 SPCT, live between 60 and 110 months (**84, 4 months**). One of the NMIP was re-operated by hepatic-jejunal stenosis 62 months after its pancreatic resection. Within chronic pancreatitis live 2 patients between 64 and 96 months (**average: 80 months**) and

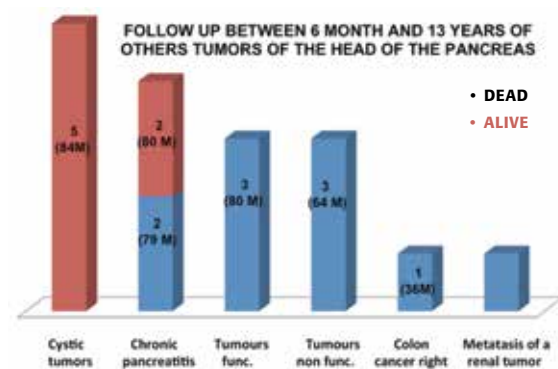
Table N° 5: Follow up between 6 months and 13 years old of Peri-ampullar cancer.



the other two died between 60 and 98 months (**average: 79 months**) one for Stroke. and one for their diabetes and infectious cadence. With regard to the colon cancer patient who invaded duodenum and had positive nodes he died at 36 months from the evolution of his right colon cancer (**Table N° 6**).

In functioning tumours of the pancreas, in the two gastrinomas and Insulinoma died between 60 months and 96 months (**average: 80 months**) in two Stroke. and another from diabetes and its complications. With respect to non-functioning tumours died the 3 patients between 48 and 96 months (**average: 64 months**), in one of them had neuroendocrine carcinoma that had had a partial venous resection and who died from a MAI. the other two by a APET and an MAI respectively. Finally, the patient with pancreas head metastasis of the right kidney and who had nodes died at 24 months (**Table N° 6**).

Table N° 6: Follow up between 6 months and 13 years of other tumors of the head of the pancreas.



DISCUSION

Cephalic duodenopancreatic resection (CDR) has been for many years the surgical procedure of choice for the treatment of both malignant and benign tumours of the bilio-duodenopancreatic confluence. On the other hand, we must mention that the cancer of the head of the pancreas is diagnosed annually in 50.000 ptes. in the USA and is expected to be duplicated that amount between 2020 and 2030, becoming the fourth cause of death in both men and women (10) (11) (12). In Argentina, it was showed a standardized mortality rate by pancreatic cancer of 7.8 to 5.7 deaths per 100,000 habitants in men and women, respectively, not observing changes in trends by triennia (1997-2001, 2002-2006, 2007-2011) (13).

Significant advances in surgical technique have resulted in a decrease in perioperative morbidity and mortality after resection, but this has not improved median overall survival of patients, those suffering from cancer of the head of the operable pancreas. In fact, one of the reasons they offered or proposed for the lack of improvement in survival among operable patients has been using the CDR, in those patients considered at high risk or at inoperable condition (14).

In relation to the diagnostic imaging methods, is recommended according to the first consensus of Pancreas Cancer in Argentina (13), the use of computed tomography clearance (CT) of abdomen and pelvis with pancreatic protocol. The use of this technique facilitates the evaluation of the tumour and its relationship with vascular structures, as well as also the detection of intraabdominal metastases (15), having a sensitivity and specificity of 63-82% and 92-100%, respectively (16). In our study, they were given an ultrasound of the abdomen, to detect the pathology that in 80 occasions allowed us to observe the tumour (76.80%), also observing in 82 cases (78.72 %) dilation of the main bile duct. In addition, a CT was performed in all patients, which demonstrated in 86 opportunities dilation of the Wirsung's duct (82.56%) and in 89 cases the dilation of the intra-hepatic bile duct and the extra hepatic (85.44%).

Therefore, magnetic resonance imaging (MRI) has a sensitivity equivalent to CT to detect and stage CP (16), but is often used preferably CT, since it can offer a greater ease interpretation and there is more experience with this imaging modality. Currently, the echo endoscopy (EE) is a diagnostic method that has gained prominence. However, it represents an invasive method and is dependent on the operator. For this reason, their systematic use in patients with pancreatic lesions characteristics shown on CT or MRI is not recommended (16). Its indication would be reserved for situations of diagnostic doubt or as first method (13). In our experience, CPRM was carried out in 49 patients (47.04%), 41 per opportunities the dilation of the Wirsung's duct (83.67%). In addition, we performed by protocol in 71 cases an endoscopy (68.16 %), founding in 32 patient's pathology of the duodenum and papilla (22.72 %).

In all the patients in our study it was practiced a PDC and as it is our custom, trying to expand the pancreatic resection as much as possible to the left of the mesenteric-portal axis in patients with tumours of the head of the pancreas and to the hepatic pedicle, lymphadenectomy prolonged by the artery to the celiac trunk. In addition, we have extended lymphadenectomy to the superior mesenteric artery and woven retro-portal. World Literature (7) (17) (18) describes several modifications to the surgical technique of PDC. During the resection phase of PDC, the ligation of the pancreatic veins between the pancreatic head and the mesenteric vein is usually prioritized. The last step, before the complete exéresis of the piece, is usually the release of the upper mesenteric artery (AMS), the ligation of the pancreato-duodenal arteries, and the section of the uncinated meso. Prioritizing the dissection of AMS at the aorta and infra mesolic level is a recent innovation. Among the advantages of this technique would be the early diagnosis of arterial invasion and a less haemorrhagic exéresis, due to the prior ligation of the pancreato-duodenal arteries, plus the resection of tissue from the meso-pancreas and avoid venous congestion of the pancreatic head (19).

We reconstructed making a telescope terminal-terminal pancreatic anastomosis with a

tutor in the Wirsung duct in cases of friable pancreas. At 10-15 cm of it, we make the hepatic-jejunal terminal-lateral anastomosis. About 40 cm from pancreatic-jejunal anastomosis, the jejunum is sectioned to make a "Y" of Roux, whose distal sector, after terminal closure, will allow the gastro-jejunostomy. In 83 cases we practiced a jejunostomy for enteral feeding and in the remaining 13 we leave a nose-yejunal tube. In addition, an systematic form in pancreatic anastomosis-jejunal a drainage, as well as in hepatic-jejunal anastomosis, where measurements of amylase and bilirubin were carried out until their extraction (7).

In relation to mortality within 30 days, 5 patients (4.80%) died. Subsequently, 5 more patients died within 90 days (9.3%). Unlike other centres in USA and Europe where it is less the mortality, but recently in Europe mortality in some centres is 7% to 8% (20). Morbidity is divided into local complications and systemic complications. The definition of the main local complications was performed according to the definitions of the international study of pancreatic surgery Group (6) (7) (21).

The most frequent complication, similar to other series (22) (23), was the pancreatic fistula. In the majority of patients performed pancreatic-jejunum anastomosis with internal tutor and climbing, observed in 32 patients (30,72%), divided into **type A**: in 25 cases (24%) where there was no clinical impact, **type B**: 4 times (3.84%) and finally **type C**: in 3 (2.88%), which one of them the patient died after being re-intervened. The type of most frequent fistula was grade A, which only required the permanence of abdominal drainage until their final resolution. Patients with sepsis or bleeding as a result of pancreatic fistula were re-operated as in a fistula type C.

Delayed gastric emptying (DGE) is one of the complications of the DPC. Its presence significantly prolongs the internment by preventing the early intake by mouth, requires probe prolonged nasogastric and parenteral nutrition. Whatever the pathogenesis of the DGV, the result is a decrease in contractile of stomach capacity and a lack of coordination between the gastric migratory motor complex and the jejunal (24). In our experience of gastric emptying

was present in 19 patients (18.24%), who had more than 10 days of Gastric tube.

Haemorrhage following a PDC is uncommon, but is a dramatic complication that can occur early or late in the postoperative period. Its incidence is between 2% - 8% of cases, which is associated with a high mortality rate which can be between 18% - 47% and is more than 25% of deaths postoperative (25) (26). In our series, in 5 patients (4.80%) they had an peritoneal haemorrhage that were re-intervened and one of whom died, representing 20%.

In relation to reoperations, there were 11 abdominal collections (10, 56%), where 4 patients (3.84%) were re operated on and the remaining 7 were drained into that collection (6.72%) with good clinical evolution. 4 evisceration patients (3.84%) were involved in 2 other cases for intestinal occlusion (1.92%), which occurred at 6 and 10 days respectively of their surgery and one for fistula in gastro-jejunal anastomosis (0.96%).

When shown the Follow up in the literature (27) (28) of these patients survival at 5 years after a PDC is about 25% to 30% for patients with node-negative and 10% for a disease with positive nodes. The incidence of lymphatic nodes positive tumours ranges from 28% to 88.6% in large series (29). The majority of studies (30) reported that positive lymphatic nodes have its negative impact on the outcome of pancreatic tumour resection in the univariate or multivariate analysis. The Lymph nodes ration (LNR) is more accurate in prediction of the outcome than the status of lymphatic nodes alone, so more lymphatic nodes removal by extended lymphadenectomy can improve the outcome and survival (31). In addition the resected or not resected patients have about a survival of 7 months respectively (32) and 36, but other studies (33) the average survival decreases respectively 19 months to 3.7 months.

When analyse our results of survival of tumours peri-ampullary region In 39 patients with pancreatic head cancer, 22 patients with positive lymph nodes died between 3 months and 36 months (**average: 15 months, 27 days**) by evolution of the disease. In addition to the 17 remaining without nodes between 48 to 96 months (**average: 66 months**), of these 10 pa-

tients died. Live 7. With regard to the survival of the 19 patients with adenocarcinoma of the papilla, of them with positive nodes, 13 died 10 which was between 7 to 48 months (**average: 15 months, 17 days**) by evolution of the disease. Of the 6 remaining without nodes between 36 to 96 months (**average: 57 months, 33 days**), died 2, 3 patients with node-positive and node-positive 4 live. In cancers of the distal common bile duct, 7 had positive nodes where died between 4 to 96 months (**average: 27 months, 14 days**) by the evolution of the disease. The remaining three between 24 to 48 months (**average: 39 months 45 days**). A patient died. In relation to cancer of duodenum, 6 patients with positive lymph nodes died between 17 months and 48 months (**average: 26.8 months**). The remaining 4 between 60 to 72 months (**average: 66 months**), where lives the GIST tumour of duodenum and adenocarcinomas of the duodenum and the other 2 died in the postoperative period of one of those incisional hernia operated by a APET.

Finally, we would like to talk about strong evidence that high-volume centres have lower mortality than low-volume centres. The required amount of PDC to consider a Centre and a surgeon as high volume is controversial (33). However, most of the works defined centres of high volume to those that perform more than 19 PDC per year and Surgeons of high volume to those who have a minimum of 60 PDC and, from that figure, a minimum of 16 PDC per year. There are multiple benefits of the centres and Surgeons of high volume in relation to the pancreatic pathology (34). There is evidence that patients treated at high-volume centres have reduced surgical mortality and morbidity, higher survival in the long term, greater number of lymph nodes in the surgical specimen, increased frequency of R0, less hospital stay, and generate lower costs (35) (36).

CONCLUSION

In summary, the results of our work carried out by the same team that were strictly supervised in its formation stage, support the concept that surgeons with low volume of annual D.P.C.,

but with a strict training in institutions with adequate infrastructure and a multidisciplinary team, can also get good results in the surgery for resection of benign and malignant lesions of biliary-duodenum-pancreatic confluent.

Conflicts of interest

The authors declare that they don't have conflicts of interest.

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RESUMEN

Antecedentes: La duodenopancreatectomía cefálica (D.P.C.) es el procedimiento quirúrgico aceptado para el tratamiento de los tumores malignos y benignos del confluente bilio-duodeno-pancreático.

Lugar de aplicación: Hospital Nacional de Clínicas y Clínica privada.

Diseño: Estudio protocolizado y prospectivo.

Material y método: Entre diciembre 2000 y diciembre 2014 se operaron 96 DPC. Las indicaciones de la cirugía fueron: 39 cánceres de la cabeza de páncreas, 19 cánceres de papila, 9 cáncer de duodeno, 10 de colédoco distal, 5 tumores quísticos del páncreas, 4 pancreatitis crónica, 3 tumores funcionantes de páncreas, 3 tumores no funcionantes, finalmente 3 tumores de otra etiología.

Resultados: Con respecto a la mortalidad dentro de los 30 días, fallecieron 5 pacientes (4, 80 %). Posteriormente, fallecieron dentro de los 90 días 5 pacientes más (9,3 %). En las complicaciones quirúrgicas, nosotros encontramos: la fistula pancreática hubo en 32 pacientes. Con respecto al Vaciamiento gástrico estuvo presente en 19 enfermos y finalmente en 5 pacientes tuvieron una hemorragia intra peritoneal que fueron re intervenidos y uno de los cuales falleció. Por otro lado, hubo 11 colecciones abdominales, donde se re operaron 4 pacientes y a los 7 restantes se les colocó un drenaje en dicha colección. Se re intervinieron 4 pacientes con evisceración, **CONCLUSIONES:** Los resultados de nuestro trabajo, apoyan el concepto que cirujanos con bajo volumen de D.P.C. anuales, pero con una estricta formación en Instituciones con infraestructura adecuada y un equipo multidisciplinario, pueden también obtener buenos resultados en las lesiones malignas y benignas del confluente bilio-duodeno-pancreático.

Palabras Claves: Duodenopancreatectomía Cefálica. Anatomía patológica. Re operaciones. Seguimiento.

Vía aérea difícil en paciente con Síndrome de Sagliker

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SUMMARY

Sagliker syndrome is a rare disease that requires airway management by experienced personnel, it was described in 2004 by Sagliker.

Case presentation: 30-year-old woman, hypertensive with chronic kidney disease of 10 years of evolution, right kidney transplant with one-year rejection and managed with hemodialysis. A bilateral parotidectomy was performed, the airway was managed with the patient awake and using a fibroscope. The intraoperative evolution was good, she was extubated without incident and after 3 days she was discharged to her home.

Conclusions: The management of the airway in patients with Sagliker Syndrome requires experience, since inadequate management compromises the lives of patients.

Key words: Sagliker syndrome; difficult airway

INTRODUCCIÓN

El síndrome de Sagliker (SS) fue descrito por Sagliker y colaboradores en 2004. Los pacientes con insuficiencia renal crónica (IRC) tienen niveles elevados de fósforo sérico (P_3^-), hormona paratiroidea (PTH) y fosfatasa alcalina, con bajos niveles de calcio (Ca_2^+). En etapas avanzadas de IRC, la excreción de P_3^- se ve afectada y la hiperfosfatemia suprime la actividad de la 1 α -hidroxilasa disminuyendo aún más la producción de 1,25-(OH) 2D3 y estimulando directamente la liberación de PTH(1). Dicho síndrome conjunta todos los cambios desencadenados por el remodelamiento óseo que incluyen talla baja, tumores pardos en diferentes partes del cuerpo y, particularmente, deformidad facial ocasionada por lesiones de tejidos blandos en el maxilar, referida como patognomónica y descrita como un rostro con “apariencia desfigurada”(4)

En 1953, Cohen y Diamond reportaron alteraciones en el cráneo de pacientes con hiperparatiroidismo secundario a la IRC. Los pacientes presentaban una apariencia fea, descrita anteriormente en la literatura como leontiasis ósea. (2)

Demirhan y Sagliker descubrieron que el síndrome se desarrolla particularmente antes de la

pubertad, mientras que la enfermedad renal crónica (ERC) alcanza la etapa 3 con hiperparatiroidismo secundario manifiesto, concluyeron en su estudio que los pacientes con SS a pesar de no tener parecido con los pacientes con displasia ósea hereditaria, podrían estar en el medio, como una combinación entre la osteodistrofia relacionada con la ERC y la displasia ósea hereditaria. La etiología exacta del SS se desconoce. No todos los pacientes con ERC e HPS severo desarrollan la complicación (8)

La aceptación universal de este síndrome todavía se debate, porque muchas características son manifestaciones extremas de hiperparatiroidismo secundario no controlado.(3)

En el 2011 se realizó un estudio internacional que incluía 60 pacientes dentro de los cuales se encontraban Turquía, India, Malasia, China, Rumania, Egipto, Túnez, Taiwán, México, Argelia, Polonia, Rusia e Irán. Se examinaron pacientes y familiares de primer grado para detectar anomalías cromosómicas citogenéticas, genes del receptor de detección de calcio (Ca SR) en las anomalías de los exones 2 y 3 y mutaciones de los genes GNAS1 en los exones 1, 4, 5, 7, 10, 13. Finalmente se concluyó que esas enfermedades óseas catastróficas eran por hiperparatiroidismo

secundario severo debido a que sus tratamientos iniciaron tardíamente debido a deficiencias monetarias y malos tratos iatrogénicos. (7)

El objetivo de este trabajo de investigación es presentar un caso clínico de síndrome de Sagliker, el manejo de la vía aérea desde el punto de vista anestésico.

CASO CLÍNICO

Mujer de 30 años de edad, hipertensa con enfermedad renal crónica de 10 años de evolución, trasplante renal derecho con rechazo al año y manejada con hemodiálisis.

Inició un año atrás con crecimiento progresivo de glándulas paratiroides bilaterales, maxilo-mandibular a expensas de osteodistrofia; dificultad a la deglución, anuria y dificultad respiratoria; diagnóstico clínico de Síndrome de Sagliker. Se le realizó paratiroidectomía.

En la valoración preanestésica se encontró paciente postrada en silla de ruedas con una vía aérea difícil, talla de 147 cm y peso de 36 kilogramos, fascies “desfigurada”, con crecimiento tumoral maxilo-mandibular, nariz aplanada, disminución de longitud de puente nasal, apertura oral limitada (menor a 3 cm), Mallampati grado IV, dientes en mal estado, distancia esternomentoniana menor a 11 cm, cuello corto, ancho, con limitada movilidad,

Patil Aldreti menor a 6 cm. Xifosis dorsal severa, tórax xifoescoliótico en pecho de paloma, estertores bilaterales, hipoventilación bibasal. Se notificó a paciente y familiares del abordaje difícil de la vía aérea.

Durante la cirugía, la paciente se posicionó en semifowler, se realizó monitoreo tipo 1 basal: TA 112/79 mmHg, FC 74 lpm, FR 28 RPM, y SAT O_2 70% sin suplemento, y con mascarilla facial 6 lt O_2 por minuto al 90%; se nebulizó con budesonida y lidocaína para proceder a realizar intubación orotraqueal por medio del fibroscopio y con la paciente despierta.

Los medicamentos utilizados fueron: 50 mcg de Fentanilo IV y 40 mg de Lidocaína IV.

Al abordaje con fibroscopio no se logró visualizar las cuerdas vocales al primer intento, intubándola en un segundo intento con un tubo orotraqueal (TOT) número 7, neumotaponamiento con 2 cc y se fija TOT en marca 22. La inducción anestésica se completó con fentanilo 150 mcg IV, Cisatracurio 4 mg IV y Propofol 40 mg IV; de medicamentos adyuvantes se utilizaron Gluconato de Calcio 2 g, Hidrocortisona 100 mg, Clonixinato de lisina 200 mg y Ondasetron 4 mg todo endovenoso. El transquirúrgico cursó sin incidentes, la paciente se mantuvo hemodinámicamente estable con Sevoflorane a 1 CAM, ventilación mecánica protectora y la emersión anestésica sin complicaciones.

Figura 1. Pre-oxigenación del paciente despierto.



Figura 2. Intubación del paciente.



Figura 3. Verificación de la intubación.



La paciente a los 3 días fue egresada a su domicilio, sin apoyo de oxígeno suplementario.

DISCUSIÓN

Ante una vía aérea difícil anticipada, la combinación de diferentes dispositivos lleva a mayor tasa de éxito y reducción de la morbilidad, promoviendo una expansión del conocimiento clínico. Sin embargo, a pesar de la introducción de nuevo equipo para su manejo, muchos autores siguen considerando al fibroscopio como el estándar de oro para lograr una intubación exitosa, esto apenas mencionado en un artículo de revisión de 2019 en la Singapore Medical Journal, dato también destacado en un estudio retrospectivo del Hospital Universitario de Portugal; resaltando la vital importancia que existan expertos en el uso del fibroscopio, ya que esta competencia le permitirá al anestesiólogo tener un plan de manejo seguro para la vía aérea difícil anticipada y una estrategia de rescate para la vía aérea difícil no anticipada. No olvidar que al usar el fibroscopio es muy importante una sedación adecuada para realizar una intubación con el paciente despierto. (10,11)

En el caso clínico presentado, cabe la presencia de un síndrome raro que padecía la paciente, que era el motivo por el cual se abordó una vía aérea difícil.

En una revisión bibliográfica del 2014 escrito por Wu y colaboradores; encontraron que el síndrome de Sagliker tiene tasa baja de incidencia, edad de inicio joven y era más común en mujeres. En dicha revisión hubo niveles altos de fosfatasa alcalina y hormona paratiroidea en la sangre de los pacientes. Se cree que el hiperparatiroidismo secundario en pacientes con síndrome de Sagliker fue inducido por hiperplasia paratiroidea. La paratiroidectomía podría detener el progreso del síndrome de Sagliker, pero no pudo revertir la aparición de malformación esquelética. Para los pacientes con síndrome de Sagliker, actualmente no existe un tratamiento efectivo. (5)

En un estudio publicado en Guatemala en el 2015 se eligió la paratiroidectomía total como tratamiento quirúrgico de elección para cinco pacientes, en lugar de la paratiroidectomía subtotal ya que el objetivo era evitar la persistencia y la recurrencia de la enfermedad. Se reportó un 0% de persistencia o recurrencia de hiperparatiroidismo. (1)

Schneider y colaboradores reportaron tasas de 4.1% de persistencia y 6.1% de recurrencia con paratiroidectomía subtotal con timectomía en comparación con 0% de persistencia y recurrencia con paratiroidectomía total sin timectomía. (6).

Por lo cual se recomienda la paratiroidectomía, ya que la mayoría de los pacientes tie-

Figura 4. Emersión del paciente.



Figura 5. Paciente a las 12 horas posteriores a su egreso de quirófano.



Figura 6. Paciente a las 24 horas posteriores a su egreso de quirófano.



nen un nivel de hormona paratiroidea intacta por encima de 1500 pg/ml (1).

Mohebi reporta 5 casos en Irán, concluyendo lo mismo que los demás artículos previamente publicados. (9)

En México se han reportado 4 casos, la incidencia reportada del síndrome es baja (sólo el 0.5% de los pacientes HPS a la ERC); el SS se ha descrito recientemente, apenas en el año 2004 y pocos textos de nefrología lo describen. El SS es una complicación grave y tardía del HPS a la ERC (2), el nuestro sería el quinto caso reportado y el primero en manejo de vía aérea difícil para cirugía de cuello.

CONCLUSIONES

El síndrome de Sagliker (SS) se asocia a complicaciones severas de ERC, un apego inadecuado al tratamiento y carga genética que predispone al paciente a padecerlo.

El manejo de la vía aérea en el Síndrome de Sagliker requiere de experiencia ya que un manejo inadecuado compromete la vida.

Siempre se debe tener en cuenta las recomendaciones para el manejo de la vía aérea de estos pacientes durante la cirugía de resección de paratiroides.

Conflicto de intereses

Los autores declaran no tener conflicto de interés.

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RESUMEN:

Introducción: El síndrome de Sagliker es una enfermedad rara que requiere manejo de la vía aérea por personal experimentado, fue descrito en 2004 por Sagliker.

Presentación del caso: Mujer de 30 años de edad, hipertensa con enfermedad renal crónica de 10 años de evolución, trasplante renal derecho con rechazo al año y manejada con hemodiálisis. Se le realizó paratiroidectomía bilateral, el manejo de la vía aérea fue con la paciente despierta y uso de fibroscopio. La evolución transoperatoria fue buena, se extubó sin incidentes y después de 3 días fue egresada a su domicilio.

Conclusiones: El manejo de la vía aérea en pacientes con Síndrome de Sagliker requiere de experiencia ya que un manejo inadecuado compromete la vida de los pacientes.

Palabras clave: Síndrome de Sagliker; vía aérea difícil.

Abnormal Lipids and Acquired Immune Deficiency Syndrome: Association of Serum Lipids with HIV Status

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ABSTRACT

Context and Aim: Hematological abnormalities are amongst the most common complications of infection with HIV. There have been quite a few studies on the alterations in lipid profile, too, though the results have largely been inconclusive. The present study was carried-out to assess CD4 cell counts and lipid profile in the HIV infected and AIDS patients in the Indian population and correlates them with the sero-negative controls.

Materials and Methods: The present study was designed as a cross-sectional, hospital-based study to assess CD4 cell counts and lipid profile in the HIV infected and AIDS patients in the Indian population and correlates them with the sero-negative controls. Evaluation of lipid profile was done using Erba EM 360, an automated analyzer powered by a diffraction grating photometer while CD4 cell counts were evaluated using Partec Cyflow Counter.

Statistical analysis used: The data was analyzed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). Comparison of the said parameters was done using Analysis of Variance (ANOVA) and post-hoc Games-Howell test. p-value of <0.05 was considered statistically significant.

Results: The levels of total cholesterol and low-density lipoproteins (LDLs) were significantly decreased while triglycerides and very low density lipoproteins (VLDLs) were significantly increased in the HIV infected and AIDS patients when compared with the sero-negative controls.

Conclusion: Total cholesterol, LDLs, triglycerides and VLDLs were significantly altered in the HIV infected and AIDS patients when compared with the sero-negative controls.

Key words: CD4 lymphocyte count, *dyslipidemias*, HIV, Acquired Immunodeficiency Syndrome, serum, lipids

INTRODUCTION

AIDS is an Acronym for Acquired Immune Deficiency Syndrome caused by a retrovirus known as human immunodeficiency virus (HIV) which breaks down the body's immune system leaving the patient vulnerable to a host of life threatening opportunistic infections, neurological disorders or, unusual malignancies [1]. The two known types of this virus include the HIV-1 and HIV-2 which belong to a family of primate lentiviruses [2,3]. According to estimates by World Health Organization

(WHO) and The Joint United Nations Program on HIV/AIDS (*UNAIDS*), 35 million people were living with HIV globally at the end of the year 2013 [4]. The first AIDS case in India was detected in the year 1986 [4]. HIV is transmitted by both homosexual and heterosexual contact, by blood and blood products, by infected mothers to infants either via intra-partum or, peri-natal routes or, via breast milk and by occupational transmission [5].

India carries the third largest number of HIV infected and AIDS patients in the world after South Africa and Nigeria [6]. In India, the high-

est prevalence of HIV/AIDS cases has been observed in Nagaland followed by Mizoram, Manipur and Andhra Pradesh according to the latest national AIDS statistics by National AIDS Control Organization (NACO, HIV Sentinel Surveillance 2012-13) [7]. HIV infection causes depletion of Cluster of Differentiation-4 (CD4) cells in peripheral blood and lymphoid tissues causing Cluster of Differentiation-8 (CD8) cell dysfunction. The CD4+T lymphocytes are the primary target of HIV infection because of the affinity of the virus to the CD4+ cell surface marker. Quantification of CD4 helper lymphocytes is, thus, essential in the staging and monitoring of HIV infected and AIDS patients. With reduced CD4 cell counts in HIV infection, granulocytopenia and thrombocytopenia are seen. When the counts of granulocytes fall <500 per mm^3 , in the presence of an attendant anatomical barrier damage that follows the viral infection, invasion of the bloodstream by microorganisms is facilitated with resultant sepsis and death [1,3].

Hematological abnormalities are amongst the most common complications of infection with HIV [8,9]. There have been quite a few studies on the alterations in lipid profile, too, though the results have largely been inconclusive as well as the reasons behind such alterations, too, have remained debatable [1,9]. A plethora of studies have been conducted correlating CD4 cell counts and hematologic parameters with the lipid profile in the HIV infected and AIDS patients across different parts of the world, however, very few studies have been reported from India. The present study was carried-out with the same intent to assess CD4 cell counts and lipid profile in the HIV infected and AIDS patients in the Indian population and correlates them with the sero-negative controls.

MATERIALS AND METHODS

The present study was designed as a cross-sectional, hospital-based study to assess CD4 cell counts and lipid profile in the HIV infected and AIDS patients and correlates them with the sero-negative controls. The

study population included 1500 subjects reporting to the Outpatient Department divided into 3 groups including:

Control Group: consisting of 500 individuals who were healthy controls without any systemic illness.

HIV Group: consisting of 500 patients who were diagnosed as HIV infected; and

AIDS Group: consisting of 500 patients diagnosed as AIDS patients, depending on their CD4 cell counts.

A written, informed consent was obtained from the patients forming the study sample to participate in the study. Also, the study was sent for approval to the Ethical Committee of the Institution and permission was obtained before the start of the study. The patients at the extremes of ages, pregnant women and those on chemotherapy were excluded from the study because of possible weakened immune status. The patients who did not agree to give consent and were not willing to participate in the study were, also, excluded from the study. A detailed history was taken for each patient followed by clinical examination performed as per the protocol of Universal Precautions with the help of diagnostic instruments under artificial illumination. The findings were recorded in a specialized proforma and then, all the patients were subjected to the phlebotomy procedure to assess their CD4 cell counts and the lipid profile.

Evaluation of CD4 cell counts

50 μl of Ethylenediaminetetraacetic acid (*EDTA*) anti-coagulated blood was added to 10 μl of monoclonal antibody and after 15 minutes of incubation, 1ml of No Lyse dilution buffer was added and the sample tube was attached to the Partec Cyflow Counter (Figure 1) for an automated evaluation of CD4 cell counts in the collected samples.

Evaluation of lipid profile, total cholesterol, triglycerides, high-density lipoproteins (HDLs), low-density lipoproteins (LDLs) and very low-density lipoproteins (VLDLs): Evaluation of lipid profile was done using Erba

EM 360 (Figure 2), an automated chemistry analyzer powered by a diffraction grating photometer.

Figure 1: Partec Cyflow cell counter for evaluation of CD4 cell counts



Figure 2: Erba EM 360 for evaluation of lipid profile



Statistical analysis used

The data was analyzed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). Comparison of the said parameters was done using Analysis of Variance (ANOVA) and post-hoc Games-Howell test. p-value of <0.05 was considered statistically significant.

RESULTS

The distribution of patients based on age and gender as well as the distribution of male and female patients based on age is shown in Table.1. In the present study, the mean CD4 cell count in the control group was found to be 1125.38 while in the HIV group, it was seen to be 501.35 and in AIDS group, 256.41 dropping down significantly with the p-value being <0.001 as the HIV infection progressed to full blown AIDS. (Table 2/Graph 1) Furthermore, on analyzing the lipid profile in patients, a mean cholesterol level of 219.49 was observed in the control group with a mean of 219.29 in the HIV and 200.18 in the AIDS groups. The results were found to be statistically significant in this case, too, with the p-value being <0.001. (Table 3) In case of triglycerides, too, the results came-out to be statistically significant with a mean triglycerides level of 158.23 in the control group as against a mean value of 140.88 in the HIV and 167.43 in the AIDS groups. (Table 3) For low density lipoprotein (LDLs), a mean LDL level of 144.09

Table 1: Distribution of patients based on age groups and gender

Age group (in years)	Control Group				HIV Group				AIDS Group			
	Male	%	Female	%	Male	%	Female	%	Male	%	Female	%
10 – 20	29	5.8%	11	2.2%	11	2.2%	20	4%	06	1.2%	10	2%
21 – 30	79	15.8%	48	9.6%	79	15.8%	114	22.8%	70	14%	80	16%
31 – 40	52	10.4%	47	9.4%	81	16.2%	80	16%	90	18%	91	18.2%
41 – 50	71	14.2%	55	11%	41	8.2%	38	7.6%	55	11%	47	9.4%
51 – 60	38	7.6%	35	7%	14	2.8%	07	1.4%	31	6.2%	07	1.4%
61 – 70	22	4.4%	13	2.6%	09	1.8%	06	1.2%	07	1.4%	06	1.2%

Table 2: Evaluation of CD4 cell counts in the three groups

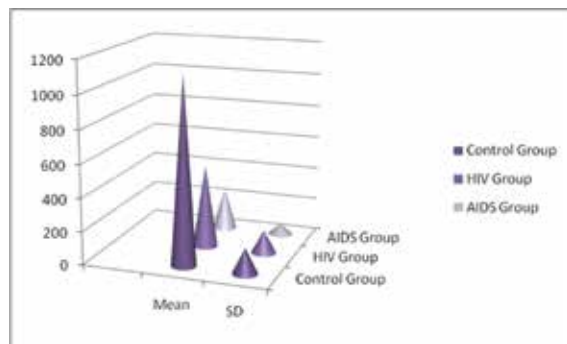
	Group						p-value	Post-hoc test
	Control Group		HIV Group		AIDS Group			
	Mean	SD	Mean	SD	Mean	SD		
CD4 cell counts	1125.38	154.73	501.35	140.20	256.41	67.05	<0.001	C>H>A

p-value <0.001 Statistically significant

Table 3: Evaluation of lipid profile and their mean comparison between the groups

	Group						p-value	Post-hoc test
	Control Group		HIV Group		AIDS Group			
	Mean	SD	Mean	SD	Mean	SD		
Total Cholesterol	219.49	37.46	219.29	43.01	200.18	39.36	<0.001	C,H>A
Triglycerides	158.23	49.20	140.88	67.79	167.43	75.40	<0.001	C>H; A>H
HDLs	46.57	22.54	45.05	17.84	45.69	14.70	0.497	-
LDLs	144.09	43.44	138.47	46.48	119.28	27.89	<0.001	C,H>A
VLDLs	32.55	8.62	32.08	10.30	37.27	11.09	<0.001	A>C,H

p-value <0.001 Statistically significant

Graph 1: Mean comparison of CD4 cell counts between the groups

observed in the control group with a mean of 1125.38 while 501.35 in the HIV group and 256.41 in AIDS group dropping down significantly with the p-value being <0.001 as the HIV infection progressed to full blown AIDS. The gradual decrease in the CD4 cell counts observed in the HIV infected and AIDS patients in the present study when compared to the controls were still higher than the mean values observed in the studies conducted by Pasupathi P et al [9,11] who recorded a mean CD4 cell count of 394 in the HIV infected and 191 in the AIDS groups and 375 in the HIV infected and 150 in the AIDS groups respectively in two different studies although the results obtained were found to be in accordance with the results of the study conducted by *Tiwari BR* et al [12] who recorded a mean value of 281 cells per mm³ in the HIV patients. The reason for the higher values obtained in the present study than as compared to most of the studies might be due to the difference in the classification of the patients into HIV infected and AIDS patients based on the CD4 cell counts. In the present study, the HIV infected, and AIDS patients were categorized based on

DISCUSSION

Human immunodeficiency virus infection (HIV)/acquired immune deficiency syndrome (AIDS) are the deadliest diseases which cause

devastation to the body by affecting the host's immune system. The pathogenesis of HIV infection is largely attributed to the decrease in the number of T cells (a specific type of lymphocytes) that bear the Cluster of Differentiation-4 + (CD4+) cell surface receptors. The immune status of an individual infected with HIV/AIDS can be assessed by measuring the absolute number (per mm³) or, percentage of CD4+ cells and this is considered as the standard way to assess and characterize the severity of HIV-related immunodeficiency [8-10].

The mean CD4 cell count in the control group in the present study was found to be 1125.38 while 501.35 in the HIV group and 256.41 in AIDS group dropping down significantly with the p-value being <0.001 as the HIV infection progressed to full blown AIDS. The gradual decrease in the CD4 cell counts observed in the HIV infected and AIDS patients in the present study when compared to the controls were still higher than the mean values observed in the studies conducted by Pasupathi P et al [9,11] who recorded a mean CD4 cell count of 394 in the HIV infected and 191 in the AIDS groups and 375 in the HIV infected and 150 in the AIDS groups respectively in two different studies although the results obtained were found to be in accordance with the results of the study conducted by *Tiwari BR* et al [12] who recorded a mean value of 281 cells per mm³ in the HIV patients. The reason for the higher values obtained in the present study than as compared to most of the studies might be due to the difference in the classification of the patients into HIV infected and AIDS patients based on the CD4 cell counts. In the present study, the HIV infected, and AIDS patients were categorized based on

their CD4 cell counts with 10-350 and 350-500 cells per mm³ of blood.

Tiwari BR et al [12] hypothesized that the fall in CD4 cell counts seen in HIV infection could be due to disruption of the cell membranes of the said cells brought-out by the budding of the infecting virus from the surface of the cells as well as the intra-cellular accumulation of the hetero-disperse RNAs and un-integrated DNAs with the progression of the disease process. Furthermore, it has, also, been proposed that an intra-cellular complexing of CD4 cells with the viral envelope products results in cell killing. Similarly, *Tiwari BR* et al [12] proposed untimely induction of a programmed cell death (apoptosis) as an additional mechanism for CD4 cell loss in HIV infection.

Hematological abnormalities are amongst the most common complications of infection with HIV [8,9]. There have been quite a few studies on the alterations in lipid profile, too, though the results have largely been inconclusive. The present study, also, showed that the lipid profile was altered in the HIV infected and AIDS patients wherein alteration in the lipid profile occurred even during the early stages of HIV infection and more so, as the disease progressed.

The results of the present study showed that the levels of total cholesterol and low density lipoproteins (LDLs) were significantly decreased while triglycerides and very low density lipoproteins (VLDLs) significantly increased in the HIV infected and AIDS patients when compared with the sero-negative controls. Hypertriglyceridemia and a decrease in total cholesterol and HDL cholesterol occurring in advanced phases of HIV infection are considered as markers of a chronic inflammatory process as proposed by *Grunfeld C* [13] and *Shor-Posner G* et al [14]. However, it has, also, been proposed that highly active anti-retroviral therapy (HAART) leads to lipid changes with increases in both triglycerides and total cholesterol [15]. Infection can increase plasma triglycerides levels by decreasing the clearance of circulating lipoproteins, a process considered to be the result of reduced lipoprotein lipase (LPL) or, by stimulating hepatic lipid synthesis

through increases in either hepatic fatty acid synthesis or, re-esterification of fatty acids derived from lipolysis [16].

Other factors that might contribute to dyslipidemia in HIV infection are altered cytokine profile, decreased lipid clearance and an increased hepatic synthesis of VLDLs. Cytokines such as tumor necrosis factor alpha (TNF- α) and interleukin-6 (IL-6) appear to promote lipid per-oxidation besides endothelial and platelet cell activation and the production of reactive oxygen species (ROS) [16]. An increase in serum triglycerides levels is observed in HIV infected patients as the disease progresses, particularly, in the presence of opportunistic infections possibly due to an increase in the levels of inflammatory cytokines (TNF- α , interleukins and interferon alpha [IFN- α]) and steroid hormones. The lower the CD4+ lymphocyte levels in peripheral blood are seen, the higher are the levels of triglycerides and the lower are the levels of total cholesterol and LDL cholesterol. In contrast, lower levels of LDL cholesterol are found in HIV infected patients regardless of their CD4+ T lymphocyte counts [16].

Different anti-retroviral drugs have been associated with abnormalities in the lipid profile in the HIV infected and AIDS patients. Various studies have shown an association between the use of protease inhibitors (PIs) and dyslipidemia. *Young J* et al [17] concluded that HDL cholesterol levels increase while triglycerides levels decrease with increasing exposure to non-nuclear reverse transcriptase inhibitors (NNRTIs)-based therapy. Similarly, triglycerides levels increase with increasing exposure to PI-based therapy. This might be one of the possible reasons for the patients in the present study to have increased triglycerides levels as the patients in the present study were on PIs.

Different studies carried-out in different countries have shown variations in their results on lipid profile in the HIV infected and AIDS patients. A study by *Crook M* [18] showed that HIV infection is normally associated with hypo-cholesterolemia, hyper-triglyceridemia and low plasma HDL cholesterol levels. Another study by *Pynka ML* et al [19] showed that there

was no significant difference in total cholesterol and low-density lipoprotein levels between HIV infected and healthy controls.

The results of the present study were in accordance with the results of the study conducted by TS Iffen et al [20] who concluded from their study an increase in the triglycerides and VLDL cholesterol in HIV infected patients compared to the controls. The probable reason given by TS Iffen et al [20] for the increase in triglycerides and VLDL cholesterol levels in their study was that increased tumor necrosis factor and other cytokines which occur during the said infection increase lipolysis and insulin resistance. Insulin regulates the uptake of glucose into the skeletal muscle tissue and other cells in the body. As insulin sensitivity decreases in HIV infected patient with reduction in CD4 cell counts, uptake of glucose into the skeletal muscle tissue and other cells is reduced leading to increased free fatty acids in the circulation and reduced storage of triglycerides in the adipose tissues. These free fatty acids return to the liver where they are sent back into circulation as triglycerides. Thus, significantly higher triglyceride levels are seen amongst HIV sero-positives compared to the sero-negative controls. VLDLs are composed predominantly of triglycerides. That is the reason for VLDL to be elevated when the levels of triglycerides are increased.

According to El- Sadir WM [21], patients with lower CD4 cell counts of below 200 cells per mm³ of blood were associated with elevation in very low-density lipoprotein (VLDL) cholesterol and triglycerides levels ($p < 0.05$). This observation was found to be in agreement with the findings from the present study. VLDL cholesterol carries fats around the body and elevation can increase the risk of heart disease. Grunfeld C [13], also, observed decreased total cholesterol levels in both HIV infected and AIDS patients.

The results of the present study were, also, found to be in accordance with the results of the study conducted by Pasupathi P et al [9] who observed decrease in serum levels of total cholesterol and low density lipoprotein cholesterol and increase in levels of triglycerides and very low density lipoprotein cholesterol in

HIV infected and AIDS patients when compared to the controls as against the results obtained in the study conducted by Akpa MR et al [22] who found increased mean total cholesterol and LDL but decreased triglycerides and HDL levels in their study and Adewole OO et al [23] who observed increased total cholesterol, triglycerides and HDL levels in HIV positive patients when compared with HIV negative patients in their study. The probable reason for lack of association might be related to the close similarity in the CD4 cell counts as most patients were in the CD4 cell count range of 50-220 cells per mm³ of blood.

Rogowska-Szadkowska D and Borzuchowska A [24] and Ducobu J and Payen MC [25] determined the levels of plasma triglycerides, total cholesterol and HDL cholesterol levels in HIV infected patients by the level of immunological deficiency according to the CD4 cell counts and concluded that with an increase in the immunological deficiency and clinical development of HIV infection, lipid profile disorders indicated by an increase in triglycerides levels and decreased concentrations of HDL cholesterol levels intensified. The results of the present study were found to be consistent with the said studies which stated that HIV infection induced an early decrease of cholesterol and a late increase of triglycerides levels with a reduction of HDL levels. Ducobu J and Payen MC [25] and Crook MA and Mir N [26], however, reported that patients with AIDS had increased levels of LDL cholesterol which contraindicated the results obtained in the present study. Shor-Posner G et al [14], also, reported similar findings in which they showed significantly low levels of total cholesterol, HDL and LDL in HIV infected patients.

CONCLUSION

From the findings of the present study, the present study concluded that total cholesterol, LDLs, triglycerides and VLDLs were significantly altered in the HIV infected and AIDS patients when compared with the sero-negative controls. Further studies are, thus, mandated from across the country with correlation analy-

ses to come to valid conclusions and manage this deadly, infectious disease process.

Limitations of the Present Study

The present study, also, suffered from certain limitations in the form of the duration of the disease process that was not considered in the present study while the present study did not take into consideration the pre-ART and ART patients, too, distinguishing between the patients as this was not a longitudinal study where a patient follow-up could have been done. Any co-existing disease processes which could have been significant in affecting the lipid profile in the patients could have, also, been considered and thus, pave way for future studies in this regard taking into consideration all these aspects that can be considered as the lacunae in the present study.

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Investigation of Incidence and Complications of Emergency Peripartum Hysterectomy

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ABSTRACT

Introduction: The emergency peripartum hysterectomy is a high-risk surgery, which is mostly performed after vaginal delivery or Cesarean section. Given the importance of complications and mortality of pregnant mothers for the health system, the present study aimed to investigate the incidence and complications of emergency peripartum hysterectomy in general and teaching hospitals of Zahedan University of Medical Sciences.

Materials and Methods: In this cross-sectional descriptive-analytic study, after obtaining the Ethics Committee approval, the medical record of patients with emergency peripartum hysterectomy admitted to Ali ibn Abitaleb hospital of Zahedan for pregnancy termination during 2017-2018 were investigated. were studied. After evaluating demographic characteristics, including age, education, and occupation, causes, and complications of emergency hysterectomy were investigated. Finally, data were analyzed by SPSS software.

Results: Out of 2438 cases, 50 cases of hysterectomy were investigated. The mean age of mothers and the average number of pregnancies was 31.06 ± 5.21 and 5.72 ± 2.31 , respectively. In this study, 35 cesarean sections (70%) and 15 normal vaginal delivery (30%) were recorded, with only 2% leading to emergency hysterectomy. The most common causes of emergency hysterectomy included placenta accreta (28%), uterine atony (24%), and uterine rupture (20%). The complications also included fever (24%), coagulopathy (14%), and wound infection (12%).

Conclusion: Placenta accreta and uterine atony are the most important causes of hysterectomy. The most common complications of emergency hysterectomy are fever, coagulopathy, and wound infections. A decrease in elective caesarean delivery and further encouraging to natural vaginal delivery could significantly reduce the incidence of peripartum hysterectomy and maternal mortality.

Keywords: Emergency hysterectomy, Uterine atony, Placenta accreta, Childbirth, Cesarean section.

INTRODUCTION

Emergency peripartum hysterectomy (EPH) is defined as extirpation of the uterus either at the time of cesarean section or following vaginal delivery, or within the puerperium period. It is usually performed in the face of unrelenting and life-threatening obstetric haemorrhage. Studying such events is very important because it provides insight into care standards and contributes to the reduction of maternal mortality (1, 2). Previous studies, mostly in developed countries, have shown that the prevalence of hysterectomy varies 4-40% by ethnic and geographical area (3-5). In a study in Iran, the prevalence was 0.37 per 100 deliveries (6). The most common causes of postpartum haemorrhage in women and

Emergency peripartum hysterectomy include uterine rupture, abruptio placentae, and uterine prolapse. The surgery even in modern midwifery is associated with high maternal mortality and morbidity (7). Complications such blood transfusion, fever, DIC, and re-laparotomy as well as maternal mortality have been highly reported (8). The hysterectomy surgery includes removal of uterus, cervix, and in some cases, the Fallopian tubes, and ovaries. In heavy postpartum haemorrhage following normal vaginal delivery (NVD), emergency hysterectomy is performed (9). The main complications of the obstetric hysterectomy include sever hemorrhage, injury to urinary tract, wound infection, disseminated intravascular coagulation (DIC), and adnexectomy (10). Hysterectomy may be either supracervical

or total. Also, oophorectomy is sometimes needed (11).

The most important indication of postpartum hysterectomy is the abnormal placental adherence (12). In recent years, abnormal placental adherence has become more common due to the increasing number of women undergoing cesarean section. According to statistics, 59.8% and 75% of patients with placenta accreta and placenta previa have a history of cesarean section (10, 13). Reports indicate that there is a direct relationship between placenta previa and cesarean section, and that the prevalence of emergency hysterectomy is more common in patients with placenta previa and placenta accreta than in patients with placenta previa. A number of factors, including multiple pregnancy, cesarean section, miscarriages, and curettage, increase the risk of placenta previa and the abnormal placental adherence (14, 15). Another concern is the inadequate experience of novice obstetricians and gynecologists in the emergency hysterectomy. According to one report from Netherlands, the average chance of successful performing one EPH for novice gynaecologists is once in the first 11 years of their work. These results indicate that more efforts should be made to identify potential risks for patients in need of emergency hysterectomy. Also, the need for experienced gynecologists is necessary to manage the early stages of the disease (10, 16).

Due to the postoperative complications of hysterectomy that can lead to maternal mortality, the importance of eliminating these complications, planning to reduce the complications of this great and vital surgery for pregnant mothers, and suggesting optimal solutions, the present study aimed to investigate the incidence and complications of Emergency peripartum hysterectomy.

MATERIALS AND METHODS

In this cross-sectional descriptive-analytic study, all pregnant women with Emergency peripartum hysterectomy who referred to Ali Ibn Abitaleb hospital of Zahedan during 2017-2018 were investigated. In total, the total number of

deliveries performed at Ali Ibn Abitaleb Hospital was 2438. In this study, all cases of emergency hysterectomy were evaluated due to limited surgery.

Study design

After obtaining the Student Ethics Committee approval, the medical record of patients with hysterectomy was studied. Inclusion criterion was the Emergency peripartum hysterectomy. The data were reviewed and entered into the checklist based on a pre-determined form. After evaluating demographic characteristics, including age, education, and occupation, causes, frequency, and complications of emergency hysterectomy were investigated. Finally, data were analyzed by SPSS software ($p=0.05$).

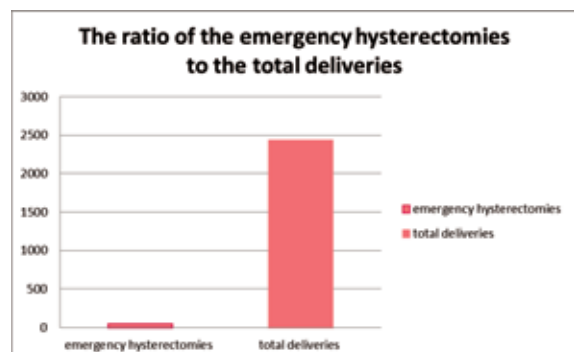
RESULTS

Out of 2438 cases, 50 cases of hysterectomy were investigated. The mean age of mothers and the average number of pregnancies was 31.06 ± 5.21 years (16-39 years) and 5.72 ± 2.31 , respectively. In this study, 35 cesarean sections (70%) and 15 normal vaginal delivery (30%) were recorded, with only 2% leading to emergency hysterectomy.

The frequency of emergency postpartum hysterectomy

As shown in Figure 1, approximately 2% of deliveries resulted in the emergency hysterectomy.

Figure 1. The ratio of the emergency hysterectomies to the total deliveries



The causes of emergency postpartum hysterectomy

In the present study, the cases resulted in the emergency hysterectomy were due to placenta accreta (28%), uterine atony (24%), uterine rupture (20%), abruptio placentae (18%), and placenta previa (10%) (Table 1).

Table 1. Causes of the emergency peripartum hysterectomy

Causes	Number	Percentage
Placenta accreta	14	28
Uterine atony	12	24
Uterine rupture	10	20
Abruptio placentae	9	18
Placenta previa	5	10
Total	50	100

Demographic characteristics and emergency postpartum hysterectomy

Due to the significance of Kolmogorov-Smirnov test ($P < 0.022$), nonparametric tests were used for age assessment. In the present study, no significant relationship was observed between age ($P = 0.664$), occupation ($P = 0.549$) and education ($P = 0.0569$) with the cause of hysterectomy (Table 2-4).

Table 2. Association of age and the causes of hysterectomy (Kruskal-Wallis test)

Causes	SD±M	P-value
Placenta accreta	27.1 ± 50.31	0.664
Uterine atony	16.2 ± 00.32	
Uterine rupture	9.0 ± 50.32	
Abruptio placentae	58.1 ± 00.31	
Placenta previa	63.1 ± 00.29	
Total	73.0 ± 00.32	

Table 3. Association of education and the causes of hysterectomy (Pearson's chi-squared)

Causes	Education		Total	Significance
	Literate	Illiterate		
Placenta accreta	8, 57.1%	6, 42.9%	14	0.569
Uterine atony	4, 33.3%	8, 66.7%	12	
Uterine rupture	4, 40%	6, 60%	10	
Abruptio placentae	3, 33.3%	6, 66.7%	9	
Placenta previa	1, 20%	4, 80%	5	
Total	20, 40%	30, 60%	50	

Table 4. Association of occupation and the causes of hysterectomy (Fisher's exact test)

Causes	Occupation		Total	Significance
	Employed	Unemployed		
Placenta accreta	5, 35.7%	9, 64.3%	14	0.583
Uterine atony	6, 50%	6, 50%	12	
Uterine rupture	7, 70%	3, 30%	10	
Abruptio placentae	4, 44.4%	5, 55.6%	9	
Placenta previa	3, 60%	2, 40%	5	
Total	25	25	50	

In the present study, the mean of hospital stay was 5.96 ± 2.57 day, with a minimum and maximum hospital stay of 2 and 14 days, respectively.

In the present study, complications of the emergency postpartum hysterectomy were coagulopathy (24%), wound infection (14%), need for reoperation (12%), need for vasopressor (4%), hospitalization at ICU (1%), mortality (20%), and bladder rupture (8%) (Table 5).

Table 5. Complications of postpartum emergency hysterectomy

Complications	Number	Percentage
Fever	12	24
Hospitalization at ICU	10	20
Coagulopathy	7	14
Wound infection	6	12
Need vasopressor	5	10
Mortality	4	8
Bladder rupture	4	8
Reoperation	2	4

In the present study, 10 infants were admitted to the NICU and 8 infants died after delivery.

In the present study, no significant relationship was observed between the cause of hysterectomy and the type of delivery ($P = 0.845$) (Table 10). Fisher's exact test was used to analyze the statistical data. Also, in mothers who had cesarean section, the most common causes of the hysterectomy were placenta accreta (78.6%), uterine atony (75%), uterine rupture (60%), abruptio placentae (66.7%), and Placenta previa (60%) (Table 6).

Table 6. Association of the type of delivery and the causes of emergency postpartum hysterectomy (Fisher's exact test)

Causes	Type of delivery		Total	Significance
	Cesarean section	Vaginal		
Placenta accreta	11, 78.6%	3, 21.4%	14	0.829
Uterine atony	9, 75%	3, 25%	12	
Uterine rupture	6, 60%	4, 40%	10	
Abruptio placentae	6, 66.6%	3, 33.3%	9	
Placenta previa	3, 60%	2, 40%	5	

DISCUSSION

Despite advances in medicine and surgery, postpartum haemorrhage is one of the leading causes of maternal complications and mortality (17). The emergency hysterectomy is a way to save the lives of pregnant mothers, especially in cases of persistent postpartum haemorrhage. This method has been supported by obstetricians for more than 100 years (18). In fact, before Porro's Operation, maternal mortality following cesarean section was approximately 100% (19). The Porro's method reduced the mortality rate by 58% and today the method is very successful with the corrections made by many gynaecologists (20). The present study aimed to investigate the incidence and complications of Emergency peripartum hysterectomy. The results of our study showed that 2% of deliveries resulted in emergency hysterectomy. Huque et al., in their study on 193 hospitals in 21 countries, reported that 5% (1020/20017) of women have hysterectomy (12). Fangfang et al, in a study on Chinese rural women, reported a 3.31% prevalence of hysterectomy (21). In a meta-analysis study by Akker et al, the prevalence of hysterectomy based on income level was reported to be 2.8 and 0.7 per 100 deliveries in low- and high-income communities, respectively (22). The difference in the prevalence rate could be due to differences in the statistical population of the study.

Also, in the present study, 28, 24, 20, 18, and 10% of cases resulted in the emergency hysterectomy were due to placenta accreta, uterine atony, uterine rupture, abruptio placentae, and Placenta Previa. Complications of

the emergency postpartum hysterectomy were coagulopathy (24%), wound infection (14%), need for reoperation (12%), need for vasopressor (4%), hospitalization at ICU (1%), mortality (20%), and bladder rupture (8%).

In a study by Chawla et al. (2), the most common cause of emergency cesarean section was uterine atony (25%), abnormal placental adhesion (21.4%), uterine rupture (9.17%), and Placenta previa (8.9%). Also, the most common complications of emergency hysterectomy were fever (25%), coagulopathy (12.5%), wound infection (10.7%), need for reoperation (2.6%), hospitalization at ICU (35.7%) and maternal mortality (17.9%) (2). In a study by Zhang et al. (2017), the leading cause of emergency hysterectomy was abnormal placental adherence (53.1%). Also, the most common complications included coagulopathy trauma, wound infection, and urinary tract trauma, which were rather similar to our study. At the same time, there was 1 case of maternal mortality, which was less than our study (23). Nohira et al. reported 13 cases of postpartum hysterectomy out of 42,119 deliveries. Uterine rupture (38.5%) was the most common cause in their study, and the disseminated intravascular coagulation was the most common complication before and after surgery (24). In a study by Begum et al., the most common causes of emergency hysterectomy were placenta accreta, uterine atony, and uterine rupture, respectively. The most common complications were also coagulopathy (37.9%), fever (48.5%), bladder trauma (3.3%), and maternal mortality (4.5%) (25). In a study by Lee IH et al., the most common causes of emergency hysterectomy were placenta accreta (54.3%), uterine atony (30.4%), uterine rupture (6.5%), and placenta previa (4.3%) (26).

According to most global studies, abnormalities in preimplantation embryo is generally the leading cause of Emergency peripartum hysterectomy (27). According to previous studies, the use of oxytocin and various drugs to stimulate the uterus is one of the dangerous factors for uterine atony that may necessitate emergency hysterectomy (7). The reason for this difference in this study may be that surgical interventions to control uterine atony, including compression

sutures and pre-hysterectomy sclerotherapy are not yet widely used. Also, the measures of the national health network to reduce the cesarean section and increase vaginal deliveries and ethnic factors can be effective; therefore, in case of risk factors, preventive measures to uterine atony are strongly recommended and induction of uterine should be performed with caution. According to the present study, the most common indication of obstetric hysterectomy in patients with a previous uterine scar was placenta accreta.

In a study by Macharey et al. (2015), the emergency hysterectomy was prevalent in 2001 and 2007, while 2010 showed an increasing trend of hysterectomy (28).

In addition, the results of our study showed no significant association between the age, occupation, and education with the causes of hysterectomy. In a meta-analysis by Wilson et al., the first menstruation cycle and low level of education were positively associated with hysterectomy, although they suggested that the data should be interpreted with caution due to variance in studies (29). In addition, it has been shown that the low level of education is associated with a higher risk of hysterectomy, though varies by ethnic (30, 31) and geographical area (32). In another study, Cooper et al. investigated the social and economic status of pregnant women in Australia and the United Kingdom. They found an inverse relationship between education, occupation, and dropout age with hysterectomy (33). Liu et al. also reported no significant relationship between hysterectomy and education, though suggested that older women are susceptible for increased risk of hysterectomy (21). However, in our study, there was no significant relationship between the mentioned variables and hysterectomy, which could be further investigated in future studies.

In general, emergency hysterectomy is an essential treatment in childbirth, which, while reducing the potential for childbearing, in many cases saves the mother's life. Due to the increasing number of cesarean sections and multiple pregnancies, the prevalence of emergency hysterectomy is likely to increase, requiring healthcare systems to train specialists, increase their skills, and allocate more facilities.

CONCLUSION

Based on the results of our study, the most common causes of hysterectomy were placenta accreta and uterine atony. Complications such as fever, coagulopathy and wound infection were the most common complications of emergency hysterectomy; therefore, it seems that a decrease in Cesarean section without indications and further accuracy in the managed natural childbirth could significantly reduce the incidence of obstetric hysterectomy and maternal mortality.

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Relationship between Level of 25 (OH) D Vitamins and Cognitive Impairment in Chronic Kidney Disease (CKD) in Dialysis and Non-Dialysis Patients Using Trial Making Test B

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ABSTRACT

Deficiency in vitamin D and cognitive dysfunction commonly are associated together in patients suffering from chronic kidney disease (CKD) in both dialysis and non-dialysis patients, vitamin D develop new protective regulatory roles in the functions of CNS. Combination of low levels of vitamin D and CKD can be enrolled for devastating and lead to sever cognitive dysfunction. Patients with CKD mostly associated with Hypovitaminosis and moreover common in elderly patients and related with cognitive decline, one of the hypotheses that CKD patients commonly have a low level of vitamin D and have potential experience in accelerated cognitive decline which rarely link on this topic. Most of CKD patients particularly sensitive for developing in the deficiency of vitamin D. Reduce vitamin D intake, male absorption in compromised GIT patients, loosing of vitamin D binding protein with urine, and α -hydroxylase enzyme reduction in the kidney all are the risk factors included in the causes of 25(OH) D vitamin decrease production.

Aim of study: assess cognitive function by using one validated score: trial making test B in patients with CKD in both dialysis and non-dialysis.

Patients and methods: a total of 54 patients with CKD and 57 patients with ESRD on hemodialysis enrolled in this study, where CKD defined as GFR < 60 ml/min by MDRD study. Exclusion criteria include CVA, deaf and blind, and low education patients. Cognitive functions assessment done for patients who are on hemodialysis and non-dialysis by using trial B testing, this second assess spatial scanning concentration and executive function by time measuring that needed to connect the series of numbered that are sequentially and littered circles. Catastrophic shorter time completion with a maximum of 300 second indicates better performance. 25 (OH) D vitamins has assessed from each patients using direct immunoassay method, with assay at 4-110 ng/ml.

Results: for patients on hemodialysis 27 (39.7%) has deficient 25(OH) D vitamin status 25 (36.7%) insufficient, 20 (29.4%) had sufficient vitamin D levels, significant low level in patients on hemodialysis in comparison to those with non-hemodialysis. Trial making test B score was significantly lower in dialysis patients, significant correlation between cognitive function assessment (trial making test B) and low vitamin D level.

Conclusions: the prevalence of deficiency in vitamin D in CKD especially hemodialysis patients associated with cognitive decline.

Keywords: CKD, ESRD, dialysis, vitamin 25(OH) D, and trial making test B.

INTRODUCTION

Cognitive impairment (CI) and deficiency in vitamin D always together detected in CKD patients. Meanwhile in CNS regulatory and neuroprotective roles were played by vitamin 25(OH) D. These factors draining are effective clues lead to CI and complicate through related processes which important causes for mortality in addition to

morbidity. Deficiency in vitamin D and cognitive decline have both together important effect on CKD patients, where the periodical determination of status of D vitamin and its supplementation, with continuous screening for neuropsychological state must be achieved in of clinical care units for CKD patients¹. Cognitive impairment have been accelerated with deficiency of vitamin D in CKD patients, in spite of this fact little previous studies

achieved in this side². The sources of vitamin D are photosynthesis, vitamin enriched diet, and oral supplementation with tow formula one is 25(OH)D and the other 1,25(OH)2D where the second one is the active form which derived from 1 α -hydroxylation of the first form where occur in kidney and other tissues like brain³. Other function of vitamin D is to regulate the levels of phosphorous and calcium and keeping the bones healthy^{4,5,6,7}. All ages are affected by deficiency in the level vitamin D and consider a risk factor resulted from CKD, deficiency of sun exposure, obesity, and inadequate diet⁸. Pollutions of the air is a risk factor for deficiency of vitamin D according to low level of UV light⁹. Level of vitamin D also affected by genetic variation within populations according to changes in polymorphism of 1 α -hydroxylase enzyme and expression of vitamin D binding protein¹⁰⁻¹³, So that this study was aimed to assess cognitive function by using one validated score: trail making test B in patients with CKD in both dialysis and non-dialysis.

PATIENTS AND METHODS

The study archived in the campus of Baghdad Medical city; the study extended during the period from May 2019 to February 2020. Hemodialysis center received ESRD patients three times weekly, with period of 3-4 hours for each treatment. A trained nephrologists screened all the participants, and assess their eligibility criteria for CKD, in which CKD was defined as eGFR<60 mL/min on at least two occasions during the period of study (calculated using six-variable in the Modification of Diet in Renal Disease (MDRD) study). In ESRD patients the recording of laboratory data occurs periodically in each month, And the values of cognitive function testing recorded within 1 month (parameters other than cholesterol and parathyroid hormone recorded within 6 months)

Trail making Test B (Trails B)¹⁴: Visuospatial scanning, executive function (duties which in need for self-shifting and memory) were evaluated by this test as well as to concentration, all that values used to estimate the time required to link sequential series of lettered and

numbers circles. Better performance indicated by completion within short time out of 300 second maximum.

Cognitive impairment¹⁵: Consistent with prior studies, the function that is impaired executive considered to be a Trails B score of > 300 sec.

Vitamin D assessment: Vitamin D [25(OH)D] levels assessed from each participant, using a direct enzyme immunoassay method¹⁶. With assay range 4.0 – 110 ng/mL (product code: IS-2520N).

Statistical analysis: For comparison between two categorical variable chi-square tests used, while for two continuous independent t-tests used. Linear regression analysis used for assessment of the correlation between vitamin D or serum creatinine with cognitive function score. All analyses carried out using SPSS version 23.1, p-value considered to be significant <0.05.

RESULTS

A total of 63 CKD and 68 patients with ESRD for dialysis that enrolled in present study, for assessment of the baseline no significantly differences in age, gender, hypertension history, and the coronary artery disease (CAD), accordingly the history of diabetic, and serum creatinine was significant higher in patients on dialysis, while serum hemoglobin was significantly lower in dialysis patients compared to CKD patients as illustrated in table 1.

Table 1: Baseline characteristics

Variables	CKD	Dialysis	p-value
Number	63	68	-
Age (y), mean \pm SD	49.0 \pm 9.5	52.0 \pm 9.1	0.457
Gender, n (%)	Female	26 (41.3%)	0.755
	Male	37 (58.7%)	
Diabetic, n (%)	29 (46.0%)	40 (58.8%)	0.019
Hypertension, n (%)	55 (87.3%)	59 (86.8%)	0.322
CAD, n (%)	28 (44.4%)	27 (39.7%)	0.780
GFR	32.9 \pm 9.7	-	-
Creatinine (mg/dL), mean \pm SD	3.2 \pm 1.1	8.7 \pm 2.7	<0.001
Hemoglobin (mg/dL), mean \pm SD	9.8 \pm 1.3	7.8 \pm 0.7	<0.001

For CKD patients, 27.0 ± 6.7 had deficient 25 (OH) D levels, 40.4% insufficient, while 0 (0%) had sufficient levels of 25 (OH) D levels. According to vitamin D levels in patients with dialysis only 27 (39.7%) had sufficient amount level, while 25 (36.7%) deficient level of vitamin and only 20 (29.4%) recorded in serum level ≥ 20 ng/mL, serum had significant level of 25 (OH) vitamin D lower in patients on dialysis compared to those with CKD, as illustrated in table 2.

Table 2: Assessment of vitamin D

Variables	CKD	Dialysis	p-value
Number	63	68	-
25 (OH)D (ng/mL), mean \pm SD	27.0 ± 6.7	15.7 ± 5.3	<0.001
<12 ng/mL	0 (0%)	27 (39.7%)	
12 - <20 ng/mL	23 (36.5%)	25 (36.7%)	
≥ 20 ng/mL	39 (61.9%)	20 (29.4%)	

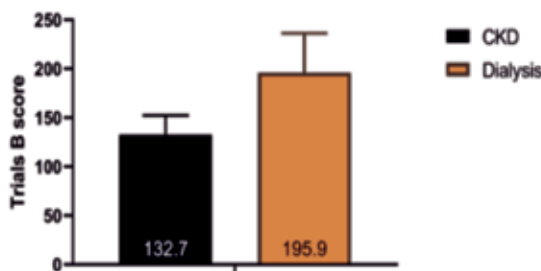
Mean Trails B was higher significantly in dialysis patients compared with CKD, as illustrated in table 3 and figure 1.

Table 3: Numbers and Mean of Tests on Performance and Reports of Self- Questionnaire for Subjects with ESRD and CKD

Variables	CKD	Dialysis	p-value
Number	63	68	-
Trails B	132.7 ± 19.6	195.9 ± 40.5	<0.001

Trails B, lower scores indicate better performance.

Figure 1: assessment of trials B score



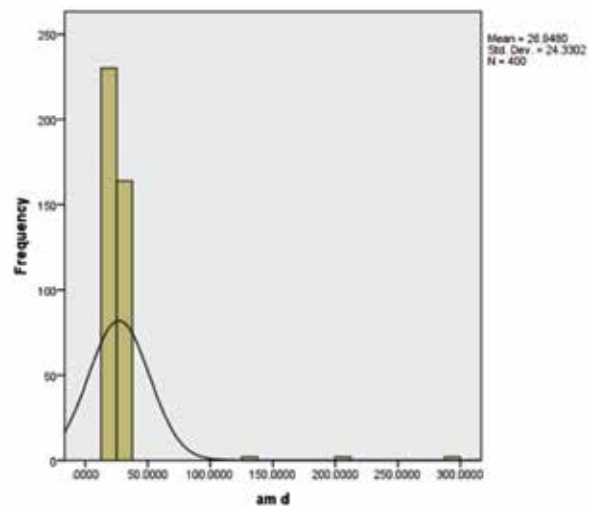
There was a significant correlation between various cognitive function tests (Trails B) with vitamin D, as illustrated in table 4 and figure 2.

Table 4: The relationship between 25 (OH) D with various cognitive functions in dialysis patients

	25 (OH) D	
	r	p-value
Trails B	-0.890	<0.001

r: correlation coefficient

Figure 2: relationship between vitamin D with trials B score in dialysis patients



There was a significant correlation between various cognitive function tests (Trails B) with creatinine, as illustrated in table 5.

Table 5: Relationship between serum creatinine with various cognitive functions in dialysis patients

	Creatinine	
	r	p-value
Trails B	0.833	<0.001

r: correlation coefficient

DISCUSSION

In our study, the mean age patients was (52.0 ± 9.1) years for dialysis patients and (49.0 ± 9.5) years for CKD patients, which related to other studies like, Jovanovich et al (a study carried out in the USA involved 247 CKD patients, 358 ESRD on dialysis patients) mean age was 69 ± 12 years for CKD patients and 66 ± 11

years for ESRD patients¹⁷, Liu et al study (study carried out in China involved 273 peritoneal dialysis patients) mean age was similar to our 53.58 ± 14.06 years¹⁸. In the present study, there was a direct significant correlation between serum creatinine with Trails B score. This indicates poor cognitive function associated with lower creatinine in ESRD patients on dialysis. In our study the correlation was significant between 25 (OH) D and Trails B score ($r = -0.890$, p -value < 0.001). Other study for 858 elderly Italian patients more than 65 years old were the relative risk was significantly higher cognitive decline in patient with level lower than 10 ng/ml of vitamin D, associated with patients higher than 30ng/ml of vitamin over period of 6-years^{19,20}. The European men for elderly people is less than 14 ng/ml which mostly related to low performance on tests which evaluated the rapidity of information processes but not memory²¹. Mechanisms by which vitamin D related to CI are more varies, in one study 255 U.S. patients with hemodialysis by mean of 62.9 ± 16.9 over the period of 2004-2012, reported that 139(49%) of patients had level of vitamin D between 12-20 ng/ml, and 36(14%) had level lower than 12 ng/ml, while 80(31%) recorded more than 20 ng/ml²². The higher global cognitive score is associated independently with level lower higher than 20 ng/ml of vitamin D, while lower levels are related to impaired executive function nevertheless not for global function^{23, 24, 25, 26}. Study include 36 patients in the Veterans Affairs Medical Centers between 2001-2006, all with CKD patients with dialysis and non-dialysis the result show that there is no relationship for level of vitamin D with cognitive function¹⁷. Conversely, vitamin D levels in the blood measured between 2002 and 2004, years before processing cognitive tests in 2005-2006, the result not completely explain there is an effect on cognitive study period by the level of vitamin D, and still remain the same level with first period of study. Within phone calls for 20 min the test done, and lead to selection bias. The result shows that most of the patients had not well physically feeling, with several point of cognitive impairment; they were having no tolerance a conversation in the phone for 20

minutes. This type of patients not involved in the current study. Then the selection of patients could be directed toward null hypothesis and healthier patient population. This study used to a different battery of instruments for cognitive capacity measuring. Therefore, it is not fair to equate current study with the studies of Shaffi et al, and Liu et al.^{18, 22}.

CONCLUSIONS

revalence of vitamin 25 (OH) D deficiencies in CKD especially cognitive decline associated with hemodialysis patients

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Phenotype characteristics and risk factors of polycystic ovarian syndrome among nursing students

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ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) is a common endocrine condition that occurs in women and is associated with problems such as menstrual irregularities; hirsutism; obesity; insulin resistance; acne; and later life with diabetes mellitus and uterine cancer. The study **aim** was to assess phenotype characteristics and risk factors of polycystic ovarian syndrome among nursing students. **Cross sectional study** (descriptive) included a **sample of 400** females from Faculty of Nursing, Zagazig University, Egypt. **Tools** were used for data collection; structured-interviewing questionnaire sheet, data related to anthropometric measures, risk factors about PCOS and observational check list about phenotype characteristics of PCO. **The results** showed that, (6%) of the studied student females had family history of PCO, nearly half of them had fast food, more than half of studied student females had hirsutism, more than one quarter had acne, (14.5%) had menstrual irregularity and one third of them had continuous abnormal weight gain. Also, this study showed that lack of awareness were found among majority of girls about PCOS. Therefore, **it could be concluded that**, family history of PCOS, obesity and fast food diet habits are found to be the predisposing factors for development of PCOS. The risk of PCOS increases with presence of one or more identified predisposing factors. Most of the factors tested as predisposing factors in our study are interlinked to each other and are mostly modifiable. Although that PCOS is prevalent endocrine disorder, there was poor knowledge among student females in Faculty of Nursing Zagazig University. **The study recommended** screening program from ministry of health for early detection of predisposing factors of PCOS including the secondary school students and faculties students through educational programs and messages through the counseling, brochures, to increase student's awareness about PCOS symptoms. **Further research** on larger sample size to identify how the problem is risky and how to deal it. Including the problem in social media and healthy channels.

Key words: Risk factors, phenotype characteristics and polycystic ovary syndrome.

1. INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrine condition in the developing world among women of reproductive age, affecting 5-10% of this population. This is generally characterized as the association of hyperandrogenism with chronic anovulation in women, without clear adrenal or pituitary gland underlying disease. In addition, PCOS is diagnosed on the clinical picture, supported in some women by biochemical abnormalities and/or polycystic ovaries on ultrasonography (Szydlarska et al., 2017).

Polycystic ovarian syndrome (PCOS), also known as polycystic ovarian disease (PCOD), sclerocystic ovarian syndrome, functional ovarian hyperandrogenism, chronic anovulatory syn-

drome, ovarian hyperthecosis and stein-leventhal syndrome (original term, not included in current literature). Thus PCOS was called the "feminine identity thief". This is the most common female endocrine (hormonal) condition characterized by numerous inactive ovarian follicle cysts interfering with ovarian function (Szydlarska et al., 2017).

Symptoms typically associated with PCOS include irregular menstrual periods, oligomenorrhea and or severe menstrual bleeding, chronic anovulation, subfertility, clinical and/or biochemical signs of hyperandrogenism including (hirsutism cystic acne & alopecia), hair loss, skin oiliness, seborrhea, ovarian micropolycystic appearance and metabolic abnormalities such as hyperinsulinemia & obesity. Not all these signs usually occur in the same woman (Begum et al., 2017).

Environmental status and factors, such as obesity, appear to exacerbate the underlying genetic predisposition. PCOS is characterized by increased circulating androgen rates, polycystic ovarian morphology (PCOM), suspended follicular growth and anovulatory infertility. PCOS is usually related to insulin resistance, hyperinsulinemia, metabolic syndrome components and oligo-anovulatory cycles (**Tsikouras et al., 2015**).

While some of the clinical symptoms and presentations of PCOS are age-dependent, ovarian failure and hyper androgenism (HA) are common at any age. (**Tsikouras et al., 2015**).

The impact of these symptoms on the quality of life of women can be profound and can lead to psychological distress that threatens female identity and potential disturbances in sexual behavior and attitude. Therefore, the disorder may lead to altered self-perception, unstable family dynamics and problems at work (**Teed et al., 2014**).

Accumulating evidence of PCOS-related long-term health threats (e.g. diabetes mellitus) may also have a negative effect on psychological well-being. However, PCOS diagnosis was found to be associated with sensation of agitation and anxiety (**March et al., 2010**).

Patients with PCOS can also be assumed to have a higher morbidity and mortality from the sequelae of the metabolic syndrome (type 2 diabetes mellitus, obesity, hypertension, lipid disorders, heart disease, and atherosclerosis (**Deeks et al., 2010**).

Since there is currently no cure, PCOS management is aimed at improving the health of the patient by symptomatically alleviating and preventing complications in the long term (**Kirthika et al., 2019**). Nurses can influence women with PCOS positively through counseling and education. This can also help women dealing with negative self-image that is secondary to the physical manifestation of PCOS. Such education helps women understand the syndrome and its associated risk factors in order to avoid long-term health problems. It encourages women to make positive life-style changes makes community referrals to local support groups to help women build their coping skills (**Garad et al., 2019**).

Nurses play an important role directly or indirectly in the assessment and improvement of female health throughout the PCOS. Furthermore, nurses represented a variety of care settings and specialized areas abroad, including clinical practice, education, administration and research. So, nurses are key providers of PCOS care. Hence, their respective on health for polycystic ovary syndrome patients are very important (**Azziz, 2016**).

1.1: Significance of the study:

Until now, PCOS has been considered incurable and had many serious characteristics and complications such as infertility, diabetes mellitus and cardiovascular disease. So, the nurse midwife should consult women about lifestyle modifications such as; physical exercises, reducing weight and obesity, eating healthy food and maintaining BMI between 19 and 25 and taking prescribed drugs (**Qureshi et al., 2016**). So the current study was done to assess risk factors and phenotypic characteristics of PCOS among nursing students for early detection of PCOS. And to provide small summary health education guidelines for these students informing them how to deal with PCOS

1.2: Aim of the study:

The aim of the present study was to assess phenotype characteristics and risk factors of polycystic ovarian syndrome among nursing students.

Objectives: To

- 1- Assess phenotype characteristics.
- 2- Identify risk factors of polycystic ovarian syndrome.
- 3- Assess Knowledge about polycystic ovarian syndrome among nursing students.

1.3: Research questions

1. What are phenotype characteristics of polycystic ovarian syndrome?
2. What are the risk factors of polycystic ovarian syndrome?
3. What are the students' knowledge about PCOS?

2. SUBJECTS AND METHODS:

2.1: Research design:

Across sectional design (descriptive) was conducted to achieve the aim of the study.

2.2: Study setting:

The present study was carried out in Faculty of Nursing, Zagazig University, Sharkia Governorate, Egypt. The reasons given for choosing the above mentioned setting are large numbers of students attending for learning and also it covers a wide range of students with different socio-demographic and as well as the students are in great needs for continuous education.

2.3. Study subjects:

Study subjects of this study included a sample of 400 students who in first and second academic year.

2.4. Sample Size

Assuming the prevalence of polycystic ovarian syndrome is 11.34% (Asgharnia et al., 2011) and enclosing the total number of students in the first and second academic years. And confidence level 95% and power of test 80% so the calculated sample is (400).

2.5. Tools of data collection:

A questionnaire interview sheet

Structured interviewing questionnaire was designed in English language by the researcher and was validated by highly qualified professional professors in the field. The interview was utilized to collect the necessary data about the study subjects. It was constructed use simple language structures, keeping in mind the educational level of each student. The interview consisted of seven parts as follows.

Part (I): Sociodemographic characteristic of the sample.

This part aimed to collect data related to name, age, residence, academic year and marital status.

Part (II): Medical history

This part aimed to collect data related to student's health.

It included data indicating the presence of diabetes, hypertension, cardiac disease, anemia, cardiovascular disease, hyperthyroidism and hyperinsulinemia.

Part (III): Family history

This part aimed to collect data related to family's health; it included data indicating the presence of diabetes, hypertension, and any other disease in the family.

Part (IV): Menstrual history

This part aimed to collect data about age at menarche, cycle irregularity, length, duration of blood flow, acne problem during menstrual cycle, pin during menstruation... etc.

Part (V): Anthropometric measures

This part aimed to collect data about student's weight, height, waist circumference, body mass index, blood pressure and blood glucose level.

Part (VI): Questionnaire about risk factors of polycystic ovarian syndrome

This part aimed to collect data about diet habits, consumption of fast-food, physical exercise, and family history of PCO.

Part (VII): Questionnaire about phenotype characteristics of PCO (questions 1-6)

This part aimed to collect data such as unusual amount of hair growth at different parts of the body, acne, menstrual irregularity, continuous abnormal weight gain, unusual amount of hair loss from scalp and discoloration or dark color patches on skin.

Part (VIII): knowledge questionnaire about PCO:

Developed by the researcher scoring yes score (1) and no score (0)

Ethical consideration

Research ethics was considered and maintained during the study through the following:

1. Students were informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time.
2. The researcher clarifying the aim of the study to the students included in the study.
3. The researcher assured that confidentiality of the subject data was maintained.
4. The proposal reviewed and approved by the faculty ethics committee.

Validity and Reliability

Tools were reviewed by a panel of five experts in the field of obstetrics and gynecological specialty to test its content validity. Modifications were done accordingly based on their judgment. Reliability was done by Cronbach's Alpha Coefficient Test which revealed that each item of the utilized tools consisted relatively homogeneous items.

Pilot study:

A pilot study was conducted on a sample of 10% of students who were not included in the total sample size. It was done to test the study tools in terms of clarity and feasibility, and the time required to be applied and to assess the degree of students' understanding of the questionnaire and acceptance to be involved in the study. Following the pilot study the questionnaire was reconstructed and necessary modifications were done to reach the final form.

Field work:

Data collection took a period of 6 months, from the first of February 2019 to the end of June 2019. After getting the official permission the pilot testing of the study tools was done and analyzed. The researcher started the data collection for 3 days per week before lectures and after lectures during the 6 months.

- Sampling will be started and expected to be completed until reach predetermined size.
- Approval of student was obtained before taking history and after explaining the purpose of the study.
- The researcher measure waist circumference for each student by measuring tape and measu-

re weight and height to assess anthropometric measures.

- The researcher measure blood pressure whereas, the normal range from (120/80) mm Hg. by blood pressure set.
- Also random blood glucose level was measured using blood glucose set, whereas the normal level is 80–140mg/dl (4.4–7.8 mmol/l).
- The researcher completed the questionnaire by interviewing each student individually for 15 - 20 minutes in between lectures. Tool filled" structured interviewing questionnaire" in 5- 10 minutes. the researcher observe manifestation such as facial hair and pigmentation.
- The researcher provided the students proper health education about PCOS, risk factors, complication and life style modification as diet, exercise and weight loss after filling the interview questionnaire in the form of handouts.

Statistical analysis:

Data entry was done using EPI – Info 6.04 computer software package, while statistical analysis was done using statistical packages for social science (spss) version 20. Quality control was done at the stages of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for qualitative variables.

Qualitative variables were compared using chi-square test. Statistical significance was considered at P- value < 0.05, highly significant difference obtained at $p < 0.001$.

RESULTS

Table (1): described socio demographic characteristics of studied students (400). It was found that range of the studied students age (18–20) years with mean was (19.31) years old. Meanwhile more than half of studied females (57.5%) were in first academic years and three quarter (75%) of females were from rural area.

Table (2)and Figure (1): showed that mean weight among studied females was 63.86 ± 10.5 , mean height among studied group was 160 ± 12.2 , mean Body Mass Index (BMI)

among studied female was 26.9 ± 24.3 and blood glucose level (mmol/L) among studied females was 98.77 ± 15.9 .

Table (3): discussed that (6%) of studied students had family history of PCO risk factors. Meanwhile more than three fifth of the studied group eating snakes very heavy (60.5%). In addition to nearly half (49%) of them had fast food (71% of them >3 days/week) and (70%) of them had refined carbohydrates as white bread, (57.5 %) of them had sugary beverages, such as sodas.

Table (4): showed that about one quarter (26%) of studied students had diet rich in vegetables, (54.5%) of them had insufficient water intake per day {normal water intake per day 2000-3000 ml/day} meanwhile 87% of them had physical exercise, more than one third of studied females 33% had physical exercise more than three days per week. In addition (77.5%) of them mostly walking.

Table (5): revealed that more than half (54.5%) of studied students had hair distribution at abnormal sites of their bodies, more than one quarter (27.5%) had acne, (14.5%) had Menstrual irregularity, Meanwhile (31%) had continuous abnormal weight gain ,14.5% of them had unusual amount of hair loss from scalp and (12.5%) had discoloration or dark color patches on skin.

Table (6): showed that majority of the studied group answered negatively of all knowledge questions such as majority of them (87%) answered no regarding the question say (PCOS may leads to diabetes) , more than three quarter (81%) of them answered no regarding the question say (in PCOS there is increased level of androgen hormone) and more than half of them (52.5%) answered no regarding the question say (Have you heard about "polycystic ovarian syndrome).

Table (7): showed that no statistical significant difference between level of knowledge and academic year, marital status and residence as $p > 0.05$.

DISCUSSION

The polycystic ovary syndrome (PCOS) is a lifetime disorder that occurs in 5% to 10% of women of reproductive age, making it one of the most common endocrine disorders. That is to say, PCOS results in menstrual cycle disturbances and infertility, hirsutism, disturbed glucose tolerance, insulin resistance, obesity, arterial hypertension and other metabolic syndrome (*Janssen et al., 2008*).

According to (*Begum et al., 2017*) family history of PCOS, Obesity and fast food diet are found to be the predisposing factors for development of PCOS. The risk of PCOS increases with presence of one or more identified predisposing factors. Most of the factors are interlinked to each other and are mostly modifiable. Therefore, the maternity nurse should recognize that careful monitoring and proper management of identified predisposing factors not only delays but also helpful in adequate management of the disease.

Regarding sociodemographic characteristics this study revealed that the mean age of studied female students was (19.31) years old. This finding was on the same line with the study done by (*Begum et al., 2017*) in Pakistan. They studied 250 female students participated in the study. They found that the mean age of participants was 19.76 ± 1.68 years.

This study showed that three quarter of females were from rural area. This finding agrees with study done in Pakistan by **Haq et al., (2017)** who found that about three quarter of the study sample were rural.

This study showed that majority of studied students were unmarried, and more than half of studied females were in first academic years. This finding was in similarity to a study done by **Haq et al., (2017)** who found that majority of respondents were unmarried and nearly half of respondents were of first year.

Regarding to anthropometric measures of studied students this study showed that mean weight among studied female, mean height among studied female, mean body mass index (BMI) among studied females. this finding was in similarity to a study do-

ne in Indian by **Ahmadi et al., (2013)** who found that mean weight among studied group was (57.90±9.8), mean height among studied group was (161.12±5.5), mean body mass index (BMI) among studied group was (23.14±3.8).

Regarding to risk factors of Polycystic Ovarian Syndrome among studied students this study showed that previous family history of PCO 6%. This finding was on the same line with the study done by **Singh A et al., (2018)** who found that when family history of PCOS was taken it was observed that about two fifth had positive family history in first degree relative. In the study done in USA **Kahsar et al., (2011)** of the 78 mothers and 50 sisters evaluated clinically, 19 (24%) and 16 (32%) were affected with PCOS. This shows that there is genetic predisposition for PCO.

The current study revealed another important finding concerning risk factors of PCOS. It revealed that three fifth of the studied females eating snakes very heavy. In addition to about half of them had fast food and more than two third had refined carbohydrates as white bread, also nearly three fifth of them had Sugary beverages.

This finding agreed with the study done by **Begum, et al. (2017)**, who reported that participants with more frequent consumption of fast food have 1.7 times greater risk of development of PCOS. Fast food usually contains high amounts of saturated fats and steroids frequent consumption of fast food and irregular eating habits leads to fluctuations in glucose levels, insulin resistance and increases hormonal imbalance such as hyperandrogenism adding to the risk for development of PCOS.

The current study revealed that more than half of them had hirsutism, 14.5% had unusual amount of hair loss from scalp, meanwhile more than one quarter of them had acne and 12.5% had acanthosis. These results were in contrast with **Singh A et al., (2018)** who found that acne or oily skin suggestive of androgenic activity was observed in more than three fifth of adolescent girls. Hirsutism was found in nearly one fifth of cases. Loss of hair was in 7% of girls while pigmentation was in

more than one third of girls. A study done in Rawalpindi by **(Nazir et al., 2011)** found that different results that most of respondents have hirsutism. The discrepancies among various studies and the present one has been attributed to the cultural background and inclusion criteria of the studied subjects.

Regarding to knowledge about polycystic ovarian syndrome among studied group this study showed that lack of awareness were found among majority of girls, these findings are in agreement with other study of **Sunanda et al., (2016)** in Indian.

CONCLUSION:

Family history of PCOS, obesity and fast food diet habits are found to be the predisposing factors for development of PCOS. The risk of PCOS increases with presence of one or more identified predisposing factors. Menstrual irregularity, signs of hyperandrogenism such as acne, excess body hairs (hirsutism), male-pattern baldness (alopecia) and infertility are phenotype characteristics of PCOS. The studied females have shortage of knowledge about PCOS so awareness was provided for them as information for better understanding of the disease, complications associated with it, and to participate actively in changing their life styles.

Recommendations

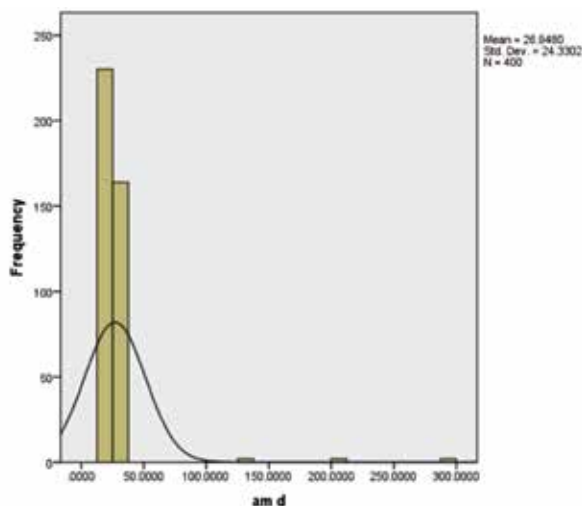
- Screening program from ministry of health for early detection of predisposing factors of PCOS including the secondary school students and faculties students.
- Educational programs and messages through the counseling, brochures, to increase student's awareness about PCOS symptoms.
- Further research on larger sample size to identify how the problem is risky and how to deal it.
- Including the problem in social media and healthy channels.

Table (1): Socio demographic characteristics of studied females.

Socio demographic characteristics	N=400	Percentage %
1-Age(years)		
18-20	386	96.5
>20	14	3.5
Mean ± SD (19.31 ± .852)		
2-Academic year		
• First	230	5.57
• Second	170	42.5
3- Marital Status		
• Married	12	3.0
• Un married	386	96.5
• Divorced	2	0.5
• Widowed	0	0
4-Residence		
Rural	300	75
Urban	100	25

Table (2): Distribution of studied students according to anthropometric measures:

Anthropometric measures	(n=400) mean ± SD (Range)
Weight (Kg)	63.86±10.5 (45-104)
Height(cm2)	160±12.2 (150-180)
Waist circumference	76.7±9.4 (70-105)
Body Mass Index (BMI) (Kg/ m2)	26.9±4.3 (19-29)
Blood pressure (mm/hg)	
Systolic	(115-145)
Diastolic	(65-100)
Blood glucose level (mmol/L)	98.77±15.9 (66-130)

FIG (1): Body Mass Index (BMI) among female students,**Table (3):** Frequency of risk factors of polycystic ovarian syndrome among studied group.

Risk factors of polycystic ovarian syndrome	Studied students (n=400)	
	No.	%
→ Family history of PCO		
• Yes	24	6
• No	376	94
→ Dietary habits		
Snakes Very heavy		
• Yes	242	60.5
• No	158	39.5
Fast food		
• Yes	196	49
• No	204	51
IF YES		
< 3days/week	56	29
>3 days/week	140	71
Refined Carbohydrates as white bread		
• Yes	280	70
• No	120	30
Sugary beverages, such as sodas		
• Yes	230	57.5
• No	170	42.5
Excess red meat, such as hamburgers		
• Yes	134	33.5
• No	266	66.5

Provided that the student may has had more than one answer]

Table (4): Frequency of risk factors of polycystic ovarian syndrome among studied students (continue).

Risk factors of Polycystic Ovarian Syndrome	Studied students (n=400)	Percentage %
1. Diet		
a-Rich in Vegetables	104	26
b-Non vegetables	40	10
c-mixed	256	64
2. Water Intake Per Day		
A-500-1000 ml	218	54.5
B->1000-2000 ml	126	31.5
C->2000 ml	56	14
3. Physical exercise		
• Yes	348	87
• No	52	13
IF yes		
• >3 days/week	116	33
• < 3days/week	232	67
Type of exercise		
• Nothing		
• Walking	52	13
• Running	270	77.5
• Exercise	10	3
• Football	15	4
• Basket	18	5
• others	12	3
	44	13

[Provided that the student may has had more than one answer]

Table (5): Frequency of phenotype characteristics of PCO among studied students.

Phenotype characteristics of PCO	Studied students (n=400)	
	No.	%
1-Unusual hair distribution at abnormal sites of your body(hirsutism)		
• Yes	218	54.5
• No	182	45.5
2-Acne		
• Yes	110	27.5
• No	290	72.5
3-Menstrual irregularity		
• Yes	58	14.5
• No	342	85.5
4-Continuous abnormal weight gain		
• Yes	124	31
• No	276	69
5-Alopecia (Unusual amount of hair loss from scalp)		
• Yes	58	14.5
• No	342	85.5
6-Acanthosis (Discoloration or dark color patches on skin)		
• Yes	50	12.5
• No	350	87.5

Table (7): Relation between socio-demographic characteristics and level of knowledge about PCOS among the studied students.

Socio-demographic Characteristics	Knowledge level				X ²	P
	Unsatisfactory N (288)		satisfactory N (112)			
	N	%	N	%		
1-Age					0.001	0.961
• 18-20	278		108	96.4		
• >20	10	96.5 3.5	4	3.6		
2-Academic year					0.802	0.370
• First	162	56.2	68	60.7		
• Second	126	43.8	44	39.3		
3- Marital Status					1.275	0.528
• Married	10	3.5	2	1.8		
• Separated	276		110	98.2		
• Divorced	2	95.8	0	0		
4-Residence					0.014	0.907
• Rural	226					
• Urban	62	78.5 21.5	74 38	66.1 33.9		

P- value < 0.05

Table (6): Knowledge regarding PCOS among studied students.

Knowledge regarding polycystic ovarian syndrome	Studied students (n=400)			
	No.		%	
	yes	no	yes	no
Have you heard about "polycystic ovarian syndrome"	190	210	47.5	52.5
In PCOS there is increased level of androgen hormone	76	324	19	81
Obesity may cause PCOS	210	190	52.5	47.5
Irregular or absence of menstrual period) cycle is a symptom of PCOS	232	168	58	42
Unusual amount of hair growth on different body parts (upper lip, chin, abdomen, breast, thighs) is a symptom of PCOS	138	262	34.5	65.5
Hair loss from scalp more than normal is a symptom of PCOS	110	290	27.5	72.5
PCOS may leads to diabetes mellitus	52	348	13	87
PCOS may leads to heart diseases	70	330	17.5	82.5
PCOS may leads to anxiety and depression	176	224	44	56
PCOS may leads to infertility (inability to have children)	238	162	59.5	40.5

Health education about polycystic ovarian syndrome for nursing females students

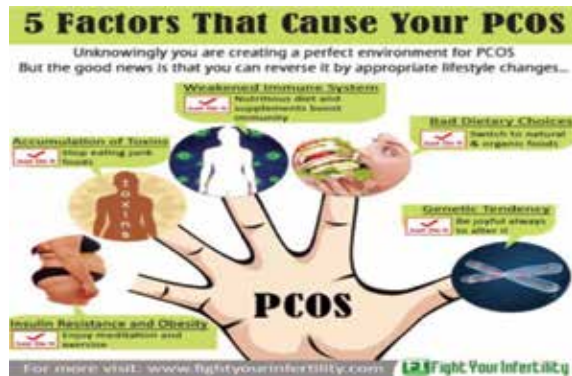
Definition:

Polycystic ovary syndrome is a condition in women characterized by irregular or no menstrual periods, acne, obesity, and excess hair growth. PCOS is a disorder of chronically abnormal ovarian function and hyperandrogenism (abnormally elevated androgen levels). It affects 5-10% of women of reproductive age. PCOS is also called the Stein-Leventhal syndrome.



Unlike women with normal ovaries (left), women with PCOS may have enlarged ovaries that contain small cysts (right).

Risk Factors for PCOS



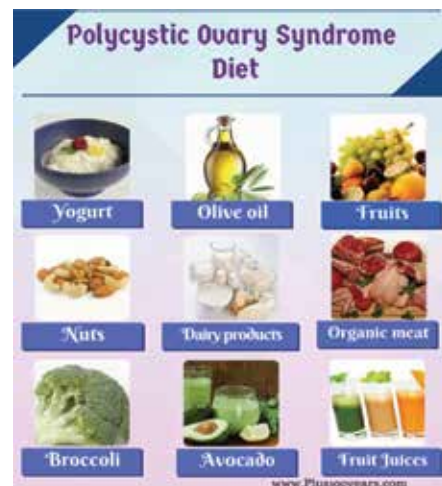
Symptoms of PCOS

- Irregular menstrual cycle. Women with PCOS may miss periods or have fewer periods (fewer than eight in a year). Or, their periods may come every 21 days or more often. Some women with PCOS stop having menstrual periods.
- Too much hair on the face, chin, or parts of the body where men usually have hair. This is called “hirsutism.” Hirsutism affects up to 70 percent of women with PCOS.
- Acne on the face, chest, and upper back.
- Thinning hair or hair loss on the scalp; male-pattern baldness.
- Weight gain or difficulty losing weight
- Darkening of skin, particularly along neck creases, in the groin, and underneath breasts.
- Skin tags, which are small flaps of excess skin in the armpits or neck area.



The 5 Essential Components of a Healthy Lifestyle for PCOS

- 1 - Eat a healthy diet
- 2 - Exercise regularly
- 3 - Get plenty of sleep
- 4 - Get a hold on stress
- 5 - Manage your weight



Treatment of PCOS

There is no cure for PCOS, but you can manage the symptoms of PCOS. You and your doctor will work on a treatment plan based on your symptoms, your plans for children, and your risk for long-term health problems such as diabetes and heart disease. Many women will need a combination of treatments, including:

- Weight loss
- Hair removal or slowing hair growth
- Prescription medicines
- In vitro fertilization (IVF)
- Surgery

Diet Rules for PCOS

AVOID

- Processed and refined foods such as maida, whole milk dairy, red meat, fried food and breads
- Refined sugar, high-fructose corn-syrup, artificial sweeteners, artificial colors, trans-fats & high saturated fat.
- Packaged foods and junk food - Any product with a long ingredient list is usually highly processed.
- Alcohol

EAT

- Gluten-free grains like oatmeal, brown rice, millet, amaranth and quinoa.
- Drink two litres of purified water daily. You can flavor your water with fresh citrus, cucumber, mint or berries.
- Food with all natural ingredients.
- 5 to 6 meals a day, every 3-4 hours.
- Always combine a lean protein and complex



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