



Faculty of Medicine
Department of Anesthesia, Intensive
Care and Pain Management

Intensive Care Management of Pulmonary Hypertension With Pregnancy

Essay

**Submitted for Partial Fulfillment of Master Degree in
General Intensive Care**

By

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M.B.B.Ch.(Assuit University)

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Ain Shams University
2014**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ
وَرَسُولُهُ وَالْمُؤْمِنُونَ

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Introduction

Pulmonary arterial hypertension (PAH) is a disease characterized by progressive obstruction of the pulmonary arterial vascular bed, leading to elevated pulmonary vascular resistance (PVR) and right heart failure if not treated adequately. Although it is still not possible to cure this disease therapeutic approaches on this devastating disorder have made remarkable progress (*Olschewski et al., 2008*). Specific advanced therapies have been developed for PAH during the last decade that have improved quality of life and outcome for patients with PAH. However, despite these recent advances, pregnancy in females with PAH is associated with a high maternal mortality (*Jaïs et al., 2012*).

Pulmonary arterial hypertension (PAH) affects males and females of all ages, but it is predominantly seen in young females. Pregnancy in women with pulmonary hypertension is known to be associated with significantly high mortality rate between 30% and 56%. The management of birth control is a relevant and prevailing issue in this patient population. It is well known that pregnancy bears an enormous risk for patients with PAH (*Weiss et al., 1998*).

Nevertheless, it is of particular importance to focus on the management of pregnancy as there will always be patients who, willingly or by accident, become pregnant against medical advice, and there is a certain number of patients being diagnosed with PAH during pregnancy. So, the care of the pregnant females with PAH requires a highly planned, multidisciplinary approach, preferably in a dedicated pulmonary hypertension (PH) referral centre. This allows formulation of an agreed and documented management strategy for planned delivery and post-partum monitoring (*Jaïs et al., 2012*).

Aim of the work

So, the aim of this article is to give an updated review of pulmonary hypertension during pregnancy regarding methods of diagnosis, challenges facing physicians dealing with critically ill parturient with pulmonary hypertension, treatment strategies and peripartum and post-partum management.

References

- 1- Jaïs X, Olsson KM, Barbera JA, et al. Pregnancy outcomes in pulmonary arterial hypertension in the modern management era. *Eur Respir J* 2012.
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مقدمة

يتميز مرض إرتفاع ضغط الدم الرئوي بانسداد متزايد في الشريان الرئوي مرض يتميز بانسداد متزايد في الشريان الرئوي الأمر الذي - إن لم يتم علاجه - قد يتسبب في فشل الناحية اليمنى من عضلة القلب. وقد شهد العقد الأخير تطوراً ملحوظاً في الوسائل العلاجية لهذا المرض المدمر.

ويعيب ارتفاع ضغط الدم الرئوي كلا من الرجال والسيدات في كل الأعمار ولكنه يظهر بوضوح في السيدات صغار السن. لذلك فإن تنظيم النسل من الموضوعات الهامة في هذه الفئة العمرية حيث يؤدي الحمل إلى مخاطر كبيرة بالنسبة لهؤلاء المرضى.

وعلى الرغم من هذا التطور الملحوظ في وسائل العلاج فإنه لا زال الحمل في السيدات المصابات بارتفاع ضغط الشريان الرئوي يؤدي إلى ارتفاع معدلات الوفيات في الأمهات والذي يتراوح ما بين ٣٠ إلى ٥٦ بالمائة.

لذلك فإن من الأهمية التركيز على متابعة الحمل حيث أن هناك سيدات يرغبن في الحمل أو أنهن أصبحن حوامل بالمصادفة رغم النصيحة الطبية • كما أن هناك مجموعة قد تم تشخيص الإصابة بارتفاع ضغط الدم بالشريان الرئوي لديهن أثناء الحمل.

لذا فإن العناية بالسيدات الحوامل المصابات بهذا المرض يتطلب خطة عالية من الرعاية المنظمة في مراكز معدة خصيصاً لذلك، الأمر الذي يستلزم وجود خطة متوافق عليها للعلاج والولادة والمتابعة بعد الولادة.

الهدف من الرسالة

لذلك فإن الهدف من هذا المقال هو معرفة الجديد في أسباب ارتفاع ضغط الدم الرئوي أثناء الحمل ووسائل التشخيص والصعوبات التي تواجه الأطباء الذين يتعاملون مع الأمهات الحوامل ذوي الحالات الحرجة كما يبين الطرق المختلفة للعلاج والمتابعة أثناء الولادة وما بعدها.



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قسم التخدير والرعاية المركزة وعلاج الألم

علاج ارتفاع ضغط الشريان الرئوي مع الحمل داخل الرعاية المركزة

رسالة
توطئة للحصول علي درجة الماجستير في الرعاية المركزة العامة

مقدمة من
طبيب/إبراهيم دسوقي فريحي نور
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I am extremely sincere to *my family* who stood beside me throughout this work giving me their support.



Ibrahim Desoky Feraihy Nour

List of Abbreviations

ALI	: Acute lung injury
APAH	: Associate pulmonary arterial hypertension
ARDS	: Acute respiratory distress syndrome
ASD	: Atrial septal defect
AVP	: Arginine vasopressin
BNP	: Brain natriuretic peptide
cAMP	: Cyclic adenosine monophosphate
CCBs	: Calcium channel blockers
cGMP	: Cyclic guanosine monophosphate
CHD	: Congenital heart disease
CI	: Cardiac index
CO	: Cardiac output
CREST	: Calcinosis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly, and telangiectasia
CTEPH	: Chronic thromboembolic pulmonary hypertension
CTPA	: Computed-tomographic pulmonary angiography
CVP	: Central venous pressure
CXR	: Chest x-ray
ECG	: Electrocardiogram
ICU	: Intensive care unit
INR	: International Normalization Ratio
IPAH	: Idiopathic pulmonary arterial hypertension
LMW	: Low molecular weight
LV	: Left Ventricle
NO	: Nitric oxide
NYHA	: New York Heart Association
PAH	: Pulmonary arterial hypertension
PAP	: Pulmonary artery pressure
PaCO ₂	: Arterial partial carbon dioxide pressure

List of Abbreviations (Cont.)

PDE	: Phosphodiesterase
PEA	: Pulmonary end arteriotomy
PH	: Pulmonary hypertension
PVR	: Pulmonary vascular resistance
PWP	: Pulmonary wedge pressure
RCTs	: Randomized controlled trials
RHC	: Right Heart Catheterization
RV	: Right ventricle
SLE	: Systemic lupus erythematosus
SVR	: Systemic vascular resistance
VKAs	: Vitamin K antagonists
VSD	: Ventricular septal defect
VTE	: Venous thromboembolism
WHO	: The world health organization
WHO-FC	: The world health organization functional class