
# بسم الله الرحمن الرحيم



# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

## يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

**To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%**

# بعض الوثائق الأصلية تالفه

بالرسالة صفحات
لم ترد بالاصل

# EVALUATION OF PULMONARY ARTERIAL PRESSURE BY DOPPLER ECHOCARDIOGRAPHY: A NON INVASIVE ALTERNATIVE TO CARDIAC CATHETERIZATION

***Thesis***

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# CONTENTS

Page

Introduction .....1

Aim of the work .....2

Review of literature .....4

- Aetiology and pathophysiology of pulmonary hypertension. .....5
- Persistant pulmonary hypertension of the newbon. .....13
- Primary pulmonary hypertension.....19
- Evaluation of pulmonary arterial pressure by cardiac catheterization ...24
- Evaluation of pulmonary hypertension by non-invasive methods.....28
  - a- Echocardiography instrument and principles .....28
  - b- Two-Dimensional examination .....34
  - c- M-mode examination .....42
  - d- Diagnosis of Functional Tricuspid incompetence by Doppler echocardiography.....53
  - f- Mechanisms for development of functional tricuspid incompetence by pulsed Doppler and Two-dimensional echocardiography. .....58
  - g- Evaluation of PASP by Analysis of blood flow in pulmonary hypertension with pulsed Doppler echocardiography .....66

Material and Methods .....70

Results .....78

Discussion.....98

Conclusions .....106

References .....108

Arabic Summary

# *Introduction*

# INTRODUCTION AND AIM OF THE WORK

There are multiple facts to pulmonary physiology but most concern to pediatric cardiologest are the factors that influence resistance to blood flow through the lung. The pulmonary vascular bed is normally a low resistance circuit, but it is prone to develop increased resistance to blood flow, which can result in serious disability. As a consequence "the lesser circulation" : (1) is a Major factor in the natural history of many cardiac lesions. (2) Determines the type of operative procedure, feasible for many patients with cardiac lesions and (3) Influence the morbidity and mortality of cardiac operations *(Fyler 1992)*

In the past, accurate measurement of pressure gradients across intra-cardiac obstructions required cardiac catheterization with catheter tip manometer. Indirect implications of the severity of valve stenosis can be obtained from the physical examination, electrocardiograph and systolic time intervals. Non of these indirect methods, however, allow direct assessment of the primary question what is the pressure gradient across the stenotic orifice? To provide that direct answer, cardiac catheterization has been required, which has limite cardiologests by the financial expense. The time involved, the potential morbidity, and the finit number of times the procedure

can be performed. Thus, the need is evident for an accurate, repeatable, inexpensive non-invasive method for obtaining the same information. Considrable data are now available to demonstrate that Doppler echocardiography fulfills these criteria ***(Lima et al., 1983).***

Doppler echocardiography has greatly enhanced the information provided by two-dimensional echocardiography, by providing information concerning pressure gradients, Intra-cardiac pressure, volumetric flow, and diastolic filling of the heart most haemodynamic information that in the past could be obtained only from cardiac catheterization can now be provided accuratly and non-invasively by Doppler echocardiolgraphy. Future development in instrument`s technology and understanding of the various Doppler velocity curves should further aid the ability to obtain a complete, non-invasive haemodynamic assessment ***(Nishimura and Jajik., 1994).***

## AIM OF THE WORK

To study the accuracy of different non-invasive methods to estimate the pulmonary artery systolic pressure, when compaired with invasive estimation by cardiac catheterization .

also, to study the effect of factors that might influence the non-invasive determination of pulmonary artery pressure e.g. atrial fibrillation

# *Review*

# *REVIEW OF LITERATURE*

Immediately following birth, pulmonary artery pressure approximates that of the aorta, but it falls rapidly and is usually half of the systemic pressure or less within the first 1-2 days. It reaches adult levels within the first 1-3 weeks of life ***(Riemnschneider et al., 1976).***

The normal pulmonary artery pressure in an individual living at sea-level has a peak systolic value of 18-25 mm Hg and diastolic value of 6-10 mm Hg and a mean value ranging from 12-16 mm Hg. Definite pulmonary hypertension is present when pulmonary artery systolic pressure and mean pressure exceed 30 and 20 mm Hg respectively ***(Grossman., 1983).***

Pulmonary arterial hypertension (PAHT) is defined by increase in mean pulmonary artery pressure above 20 mmHg.

At sea level , the normal Pulmonary artery pressure (systolic/ distolic)of children and adults is 20/12 mmHg, and the mean arterial pressure is 15 mmHg . At 15.000 feet elevation , the PA pressure is 38/14 mmHg ,and the mean arterial pressure is 25 mmHg. Diagnosis of pulmonary hypertention can be made when the pulmonary mean arterial pressure is 19 to 20 mmHg in a resting individual at sea level and 25 mmHg at 15.000 feet elevation.(**Park, 1996; *Pornin et al., 1994***).

# *Classification And Aetiology Of Pulmonary hypertension*

## I- Increased Resistance To Pulmonary Venous Drainage :

### A- Left atrial Hypertension

1- mitral valve disease

2- Cor-triatriatum

3- Left atrial myxoma.

### B- Elevated Left Ventricular Diastolic Pressure

1- Left ventricular failure

2- Reduced left ventricular compliance

3- Constrictive pericarditis

### C- Pulmonary Venous Obstruction

1- Congenital stenosis of pulmonary veins

2- Anomalous pulmonary venous connection with obstruction.

3- Pulmonary veno-occlusive disease

## II- vascular bed secondary to parenchymal disease :

A- 1- Chronic obstructive pulmonary disease

2- Restrictive lung disease

3- Collagen - vascular disease

4- Sarcoidosis.

5- Neoplasm

6- Pneumonia

7- Status post- pulmonary resection.

B- Decreased cross-sectional area of pulmonary vascular bed secondary to Eisenminger's syndrome

C- Other conditions associated with decreased cross-sectional area of the pulmonary vascular bed

1- Primary pulmonary hypertension

2- Hepatic cirrhosis and /or portal thrombosis

3- Persistent fetal circulation in the newborn ***(Grossman, 1983)***

## III- Increased Resistance To Flow Through Large Pulmonary Arteries:

A- Pulmonary thromboembolism

B- Unilateral absence or stenosis of pulmonary artery.

## IV - Miscellaneous Causes Of Pulmonary Hypertension :

A- High altitude pulmonary odema

B- Isolated partial anomalous pulmonary venous drainage

C- Tetralogy of Fallot

D- Haemoglobinopathies

E- Takayasu's disease

F- I.V. drug abuse ***(Grossman ,1983).***