Pericardial Diseases

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AIDS	quired immunodeficiency syndrome
ANA	Antinuclear antibody
AO	Aortic pressure
AP	Acute pericarditis
BNP	Brain natriuretic peptide
CABG	Coronary artery bypass graft
CEA	Carcino embryonic antigen
CK	Creatine kinase
CMR	Cardiac magnetic resonance
CMV	Cytomegalo virus
COPE	**Co**lchicin for acute **pe**ricarditis
CORE	**Co**lchicin for **r**ecurrent **p**ericarditis
C P	Constrictive pericarditis
C-RP	C-reactive protein
CT	Computed tomography
CYP	Cytochrome P
CXR	Chest-X ray
DT	Deceleration time
EBV	Ebstein barr virus
ECG	Electrocardiogram
ESC	European society of cardiology
ESR	Erythrocyte sedimentation rate
EXP	Expiration
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HP	Hepatic vein
HU	Hounsfield unit
INSP	Inspiration
IVC	Inferior vena cava
LA	Left Atrium
LDH	Lactic acid dehydrogenase

LV	Left ventricle
LVEDP	Left ventricular end diastolic pressure
MI	Myocardial infarction
MV	Mitral valve
NSAIDs	Nonsteroidal anti inflammatory drugs
PCR	Polymerase chain reaction
PCWP	Pulmonary capillary wedge pressure
PE	Pericardial effusion
RA	Right atrium
RV	Right ventricle
RVEDP	Right ventricular end diastolic pressure
SLE	Systemic lupus erythematosus
SVC	Superior vena cava
TEE	Transesophageal echocardiography
TTE	Transthoracic ecochardiography
VATS	Video assisted thorathic surgery

INTRODUCTION

The pericardium is a bilayered, flask-shaped sac structure, containing the heart and roots of great blood vessels ***(Goldstein, ٢٠٠٤).***

The pericardium serves many important, subtle functions. It limits overdistention of the cardiac chambers and facilitates interaction and coupling of the ventricles and atria. It prevents excessive torsion and displacement of the heart, minimizes friction with surrounding structures, and is an anatomical barrier to the spread of infection from contiguous structures (***Hoit, ٢٠٠٧).***

Pericardial diseases can present clinically as acute pericarditis, pericardial effusion, cardiac tamponade, and constrictive pericarditis. Patients can subsequently develop chronic or recurrent pericarditis. Structural abnormalities including congenitally absent pericardium and pericardial cysts (***Khandaker et al, ٢٠١٠).***

The clinical syndrome of pericarditis results from inflammation of the pericardium. It is diagnosed in approximately ٠,١٪ of hospitalized patients and in ٥ % of patients admitted to the emergency department with non cardiac chest pain (***Khandaker et al, ٢٠١٠).***

The pericardial sac contains approximately ٢٠ ml to ٥٠ ml of serous fluid. Pericardial effusion defines the presence of an abnormal amount and /or character of fluid in the pericardial space

and can be occur as a result of almost any pericardial disorder ***(Christie and Sawatzky, ٢٠٠٨).***

Cardiac tamponade is a life-threatening hemodynamic condition resulting from pericardial effusions that increase intra pericardial pressure sufficiently to externally compress and restrict cardiac chamber filling, constrain cardiac output and induce backward failure ***(Goldstien, ٢٠٠٤).***

Pericardial constriction occurs when the fibrotic pericardium impedes normal diastolic filling because of loss of elasticity. Usually the pericardium is considerably thickened, but it can be of normal thickness in up to ٢٠ % of cases (***Imazio et al, ٢٠٠٩)***.

AIM OF THE ESSAY

The aim of the essay is to provide a review of different pericardial diseases including classifications, causes and management.

ANATOMICAL CONSIDERATIONS OF THE PERICARDIUM

The pericardium is a bilayered, flask-shaped sac structured of an inner visceral layer made up of a thin elastic membrane of mesothelial cells and a thick, stiff outer parietal layer consisting predominantly of collagen and elastic fibers ***(Goldstein, ٢٠٠٤).***

Between the two pericardial layers is a potential "space" that normally contains a small (approximately ٢٠ to ٥٠ ml) amount of pericardial fluid which physiologically resembles an ultrafiltrate of plasma. The pericardium envelops the cardiac chambers but does not directly attach to them at any point. Instead, at the base of the heart, the serous pericardium reflects up and around the great vessels, forming the pericardial sinuses and recesses, as shown in Figure ١ ***(Hurst, ١٩٩٨).***

The pericardium is in the shape of an inverted **U** and the blind pouch, which is enclosed between the limbs of the **U** shape of the pericardium and lies behind the left atrium, is known as the oblique sinus. The passage between the venous and arterial mesocardia, that is, between the aorta and pulmonary trunk anteriorly and the atria posteriorly, is the transverse sinus ***(Goldstein, ٢٠٠٤).***

The transverse sinus, is a small tubular recess reflecting the pericardial outpouchings necessary to allow entrance of the superior

vena cava and exit from the pericardium of the pulmonary trunk and aorta. The oblique sinus is a larger pericardial outpouching in which the pericardium splits to permit passage of the four pulmonary veins and the vena cavae ***(Spodick, ٢٠٠١).***

It is noteworthy that the left atrium (LA) is not entirely an "intrapericardial" structure. The pericardium has important ligamentous attachments to surrounding thoracic structures. The external fibrous layer of the pericardium is anchored to the diaphragm by the pericardiophrenic ligament and to the sternum by the variable sternopericardial ligaments. Posteriorly, the fibrous pericardium is bound by loose connective tissue to the structures of the posterior mediastinum. These connections provide structural support for the heart within the thoracic cage and thereby limit excessive cardiac motion, particularly with changes in body position ***(Goldstein, ٢٠٠٤).***

The main arterial supply of the pericardium is the pericardiophrenic artery, a branch of the internal thoracic artery. Venous drainage occurs by way of pericardiophrenic veins which are tributaries of the brachiocephalic veins. Sensory innervation is provided by the phrenic nerves with vasomotor innervation from the sympathetic trunks ***(Spodick, ٢٠٠١).***

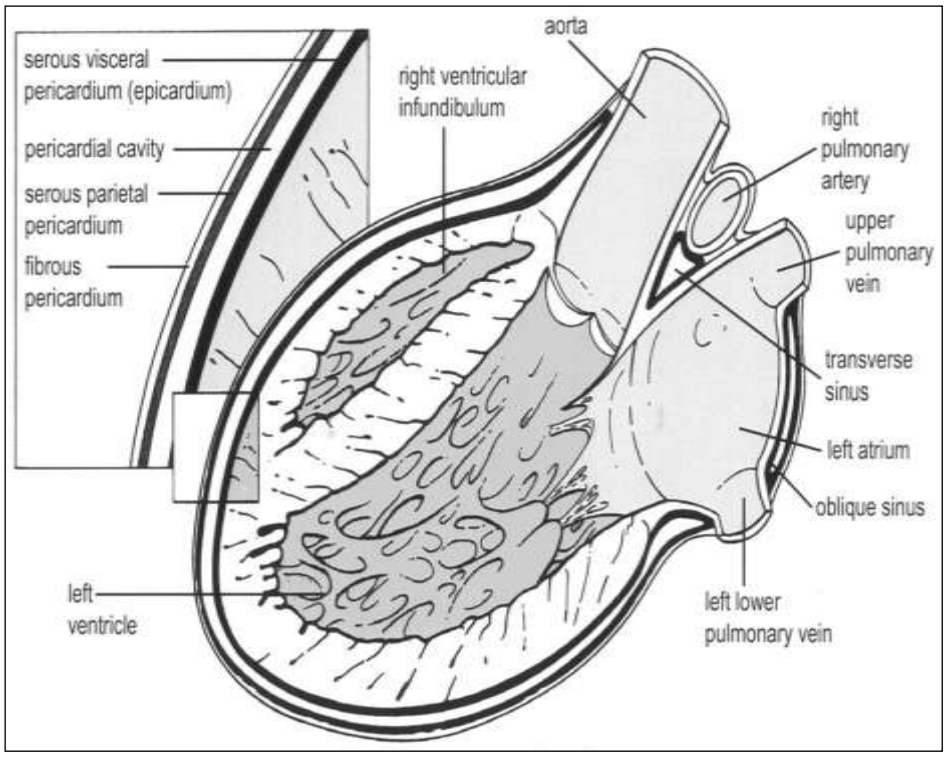

Fig. (١): A diagram of the long axis of the heart at right angles to the outlets shows the arrangement of the pericardium ***(Hurst, ١٩٩٨).***

Physiological considerations of the pericardium

The pericardium is not vital for life, as no major adverse consequences follow congenital absence or surgical removal of the pericardium. However, the pericardium serves many important, subtle functions. It limits distention of the cardiac chambers and facilitates interaction and coupling of the ventricles and atria, such that changes in pressure and volume on one side of the heart influence pressure and volume on the other side. Limitation of cardiac filling volumes by the pericardium may also limit cardiac output and oxygen delivery during exercise ***(Hoit, ٢٠٠١).***