Tumours of the heart

Definition

- Cardiac tumours are abnormal growth in the heart muscle or its adjacent structures. They are divided into benign (non-cancerous) and malignant (cancerous) tumours. Benign tumours are rare type.

Common type of benign tumour

- Myxoma, is the most common tumor inside the cavities of the heart and accounts for about half of the tumors that originate in the heart
- Rhabdomyomas, which develop in the myocardium or the endocardium and account for about one out of every five tumors that originate in the heart.

Cardiac sarcoma

- **Cardiac sarcoma** is a rare type of primary malignant (cancerous) tumor that occurs in the heart. A **primary** cardiac tumor is one that starts in the heart. A **secondary** cardiac tumor starts other parts of the body and then spreads to the heart.

Incidence

- **Primary cardiac tumors** are extremely rare, occurring in approximately 1 in 3000 individuals. Seventy-five percent of primary cardiac tumors are benign.
- **Secondary cardiac tumors** are 20-30 times more frequent than primary cardiac tumors and most commonly arise in patients with lung cancer, breast cancer, melanoma, renal cell cancer, or lymphoma.

Types of primary cariac tumour

- **Papillary fibroelastoma** – most common cardiac tumor to affect the cardiac valves. Mean age at diagnosis is 60 years old. These tumors are associated with embolization (breaking off and traveling in the blood stream) resulting in stroke or less commonly heart attack.
- **Rhabdomyoma** – most common cardiac tumor in infants and children. Typically multiple and originating from the ventricular wall. Associated Tuberous Sclerosis is seen in 1/3 of patients.
- **Fibroma** – commonly occur in infants and children. Typically located within the ventricular wall. Associated with arrhythmia (irregular heart beat) and risk for sudden cardiac death.
- **Lipoma** – tumor made up of fat cells. Diagnosis can be made non-invasively by cardiac MRI.
- **Hemangioma** – tumor made of abnormal blood vessels. Diagnosis can be made either invasively on coronary angiography or non-invasively on cardiac CT or MRI.

Myxoma

- Myxoma is a non-cancerous (benign) tumor of the heart. In fact, it is the most common primary heart tumor. A primary heart tumor is one that originates within the heart as opposed to another organ or tissue. Approximately 75% of myxomas are located within the left atrium.
- Many patients with a myxoma do not have any symptoms. For those patients that do have symptoms they may have difficulty breathing when lying flat, chest pain or tightness, coughing, dizziness, fainting, fevers, or flu-like illness.
- The diagnosis of myxoma is most commonly made by echocardiography (cardiac ultrasound). Additionally, computed tomography (CT scan) or magnetic resonance imaging (MRI) may confirm the diagnosis.

Myxoma

- The only treatment of a myxoma is surgical excision. This needs to be performed by a highly skilled cardiac surgeon because incomplete removal can result in recurrence of the tumor. Once a patient is diagnosed with a myxoma, surgical excision is usually recommended to prevent complications. These include arrhythmias (irregular heart rhythm), heart failure, embolism (breaking off of tumor cells which then travel within the bloodstream) which can cause stroke or blockage of blood flow to other organs.
- Periodic echocardiographic evaluation is recommended for patients with a history of surgical excision of a myxoma.

Causes

- **Age.**
- **Heredity.**
- **Genetic cancer syndromes.** Most children with a rhabdomyoma have tubular sclerosis, a syndrome caused by an alteration (mutation) in the DNA.
- **Damaged immune system.** Primary cardiac lymphoma occurs most often in people with a poorly functioning immune system.

Symptoms

Many patients with a cardiac tumor are asymptomatic

- Heart failure (shortness of breath, leg swelling, inability to lie flat)
- Arrhythmia (irregular heart beat)
- Chest pain
- Stroke (slurred speech, weakness, vision loss)
- Pericardial effusion (fluid/blood/tumor within the sac that surrounds the heart)
- Constitutional symptoms (fever, weight loss, elevated inflammatory markers, anemia)

Diagnosis

- echocardiogram (cardiac ultrasound)- showing the structure and function of the heart.
- computed tomography-help differentiate benign and malignant tumors
- magnetic resonance imaging -detailed images of the tumor & determine the type
- positron emission tomography -

Surgical treatment for primary tumour

Benign tumors

- Most of these can be cured if the tumor can be completely removed.
- **Complete resection of the tumour** to remove the benign tumours in the cardiac chambers.
- Some types can be followed with yearly echocardiograms instead of surgery if they aren’t causing symptoms.

Surgical treatment for primary tumour

Malignant tumors

- Because they grow rapidly and invade important heart structures, they can be very difficult to treat.
- **Surgical resection** along with chemotherapy.
- **Chemotherapy** and radiation therapy are sometimes used to try to slow tumor growth and improve symptoms (palliative care), but frequently they’re ineffective for primary heart cancer.

Treatment for Secondary heart cancer

- By the time heart metastases are found, the cancer has usually spread to other organs too and isn’t curable.
- Metastatic disease in the heart can’t be removed surgically
- Palliative care with **chemotherapy** and **radiation therapy** is frequently the only option.
- If a pericardial effusion develops, it can be removed by placing a needle or small drain into the fluid collection (pericardiocentesis).

Complication

- Severe heart failure
- Stroke
- Pericarditis