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Clinical Study of Cardiac Tumors - Myxoma in a Government Tertiary Hospital

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Abstract: *Cardiac tumors are assumed to be a rare entity. Metastases to the heart are more frequent than primary lesions. Retrospective study was carried out in Department of C.T.Surgery, Osmania Medical College/ Osmania General Hospital Hyderabad from January 1st 2004 –December 31st 2012, based on the available hospital records. Distribution of cardiac myxomas per age, showing a peak of incidence in people 45–60 years of age.*

Keywords: *cardiac tumors, myxoma, heart cancer, heart neoplasms, intracavitary cardiac tumors, myocardial tumors*

I. Introduction

Cardiac tumors are a rare, but potentially curably form of heart disease. A high index of clinical suspicion is necessary for diagnosis as these tumors have protean manifestations that mimic a variety of other cardiac and noncardiac diseases. Presently, M-mode and two-dimensional echocardiography are utilized as safe, reliable, and noninvasive imaging modalities. Seventy-five per cent of these tumors are benign, with myxoma accounting for 50% and rhabodomyoma comprising 20% of lesions. Various histologic types of sarcoma are the predominant malignant cardiac neoplasms. With strict attention to avoiding perioperative tumor embolization, surgical resection of these lesions can be accomplished with minimal morbidity and mortality [1].

Cardiac tumors are classified into primary benign or malignant tumors that arise from the heart or into secondary, metastatic tumors that invade the heart. Primary cardiac tumors occur with a low incidence. It is estimated that secondary tumors are a hundred times more common than primary cardiac lesions [2–4]. The difficulty in obtaining real epidemiological data on primary cardiac tumors is emphasized by the non reliability of both autopsy and surgical pathology series, since in the former there is the selection bias of dead patients during hospitalization and in the latter that of indication to surgery.

II. Materials and methods

Retrospective Hospital based study was carried out on a total of (n=16) patients admitted in Department of C.T.Surgery, Osmania Medical College/ Osmania General Hospital Hyderabad from January 1st 2004 – December 31st 2012. Informed written consent was taken from all the study subjects. Histological diagnosis, location, initial clinical manifestations and prognosis of cardiac tumors are reported in the case sheets. Recent advances in diagnostic techniques such as echocardiography and computed tomography (CT) enabled clinical diagnosis during lifetime, and pathological diagnosis of tumor can be obtained by surgically removed tumors or biopsy. From these accumulated pathological and clinical data, it became evident that many varieties of tumors occur in the heart and great vessels as in other organs. Of the 24 patients, 18 cases had primary benign tumor. Myxoma was the most common histological group (16 cases). Primary malignant cardiac tumors occurred in 6 patients of which rhabdomyosarcoma was the most frequent (3 cases). Diagnosis is confirmed by imaging, which is usefulto collect data on the size, mobility, myocardial invasion, relationship with adjacent structures and chamber location of the mass and other characteristics that help to determine diagnosis and prognosis. Echocardiography is the preferred modality for diagnosis. Transesophageal echocardiography is better for visualizing atrial tumors and transthoracic echocardiography is better for visualizing ventricular tumors. Cardiac MRI and cardiac CT can be useful complementary diagnostic tools. Inclusion criteria: Patients diagnosed with Cardiac Tumors – Myxoma. Exclusion criteria: Case sheets which were incomplete and which had missing data due to the non availability of patients. The aim of the study was to determine clinical study of cardiac tumors - myxoma in a government tertiary hospital.

III. Results

Table 1: Clinical Presentation of Myxoma patients

Chief complaints	**Frequency* (%)**
Dyspnea	12 (75)
Chest pain	2 (12.5)
Neurological	6 (37.5)
Constitutional	8 (50)
Atrial fibrillation	2 (12.5)
Thromboembolism	2 (12.5)
Tumor location	**Frequency (%)**
Left atrium	12 (75)
Left ventricle	1 (6.25)
Right atrium	2 (12.5)
Right ventricle	1 (6.25)

*More than one complaint

Majority (75%) had complaints of dyspnoea. Patients diagnosed with Myxoma were commonly seen in Left atria (75%) followed by right atria and ventricles.

Technique of Operation:

Surgical resection is the only curative treatment modality for cardiac myxoma. The standard approach is via median stermotomy under hypothermia and cardioplegic cardiac arrest with cardiopulmonary bypass. The tumour should be removed under direct visualisation and it is vital that fragments are not dislodged during surgery. The surgeon must also ensure that the other atria and ventricles are checked for fragments or other tumour foci.

Complete resection involves the removal of the root of the pedicle attaching the tumour to the heart wall, and consequently a full-thickness removal of the attached inter-atrial septum where appropriate. This in turn creates an atrial septal defect that can be closed primarily with a pericardial or Dacron patch.

In cases where the tumour is associated with the valve structures, it may be necessary to perform a concomitant valve repair, with or without annuloplasty, or, where this is impossible, a valve replacement using an artificial prosthesis

Table 2: Epidemiological Characteristics of Myxoma patients

Age group in years	**Frequency (%)**		**Total (%)**
	Male	**Female**	
≤15	1	0	**1 (6.3)**
15-45	1	2	**3 (18.7)**
45-60	4	5	**9 (56.3)**
≥60	1	2	**3 (18.7)**
Total	**7 (43.7)**	**9 (56.3)**	**16 (100)**
Locality	**Male**	**Female**	**Total (%)**
Rural	3	4	7 **(43.7)**
Urban	4	5	9 **(56.3)**
Total	**7 (43.7)**	**9 (56.3)**	**16 (100)**

Patients diagnosed with Myxoma were more common in 45-60 years age group, followed by 15-45 and ≥60 years age group. Patients diagnosed with myxoma were more common in female (56.3%) when compared to male. Patients diagnosed with myxoma were more common from urban areas when compared to rural areas.

IV. Discussion

Embolization was the characteristic initial clinical manifestation for myxoma. All patients with myxoma who were asymptomatic underwent operation, and there were no surgical deaths. Myxomas are usually seen in adults.

In the present study one case (6%) was identified in ≤15 age group. They are rarely seen in children, accounting for only 9-15% of all cardiac tumors from birth to adolescence. They are often found attached to the atrial septum and mitral valve apparatus in the left atrium (>85%) [5]. Similar findings (7.1%) were reported by Amano et al [6]. Patients diagnosed with myxoma were more common in female when compared to male. Similar findings (65.2%) were reported by Yu et al [7]. Krishna et al has stated that atrial myxomas have a predilection for female sex (80%) [8]. Patients diagnosed with myxoma were more common from urban areas when compared to rural areas.

Patients diagnosed with myxoma were commonly seen in left atria (75%) followed by right atria and ventricles. Study done by Yu et al reported that myxomas have a special predilection for the left atrium (93.5%) [7]. Similar findings were reported by other authors [5]. Atrial myxomas generally arise from the interatrial

septum at the border of the fossa ovalis. Right atrial myxomas are more likely to have broad-based attachments than left atrial tumors and also are more likely to be calcified [9]. Grossly, myxomas were round or oval tumors with a smooth or slightly lobulated surface [9,10]. Most were solitary, polypoid, relatively compact, pedunculated, mobile, and not likely to fragment spontaneously. Mobility depended on the length of the stalk, extent of attachment to the heart, and amount of collagen in the tumor [9].

Myxomas may embolize; this may be their first clinical presentation. Peripheral embolization is reported to occur in as many as 70% of patients with myxomas and may even occur in utero [5]. Majority (75%) had complaints of dyspnoea. Similar findings were reported by Vyas et al. [8]. In the present study the average size of cardiac tumors was approximately 5.3 cm in diameter, and average weight was approximately 50.1 grams. The average weight of myxomas was 51.2 grams (range from 14 to 205 grams).

Surgical resection is the main stay of treatment. After excision of tumor the base of stalk of tumor is cauterised in all cases, one case was re explored post operatively on 3rd day for post operative bleeding. One patient expired post operatively on 3rd post operative day due to pulmonary embolisation of right ventricular tumor which was removed peacemeal and adherent to right ventricular wall. Some patients need replacement of mitral valve for mitral stenosis, mitral regurgitation but in our series all valves are normal did not require valve replacement.

V. Conclusion

As rapid advances have been made in cardiovascular imaging, the diagnosis of cardiac tumors dramatically improved, the type of cardiac tumors could be accurately predicted. That means patients could choose the proper treatment in time. The progress of diagnosis may account for the high incidence on the whole, also the high ratio of benign tumors. The risk of recurrence of myxoma is between 1–3%, which is likely associated with multicentric and familial myxomas [10].

Limitations in study:

Due to the nature of a retrospective study, the prognosis of cardiac tumors and longitudinal changes could not be fully assessed. This study was based on the clinical data; the prevalence of different cardiac tumors in this study is greatly different from the studies on autopsy

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