http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v7i9.28

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Experience with Cardiac Myxomas (Rare Benign Tumor) at our center: A prospective study and analysis

Authors
Dr Vaibhav Chugh (SR CTVS), Dr Rahul Bhushan (SR CTVS), Dr Dhananjay Bansal* (MCh CTVS), Dr Narender Singh Jhajhria (Prof CTVS), Dr Vijay Grover (Prof. & HOD CTVS), Dr Vijay Gupta (Prof CTVS)
ABVIMS, Dr. R.M.L. Hospital, New Delhi, Pin Code: 110001
*Corresponding Author
Dr. Dhananjay Bansal (MCh CTVS)
Dept. of CTVS, ABVIMS, Dr. RML Hospital, New Delhi, India

Abstract
Introduction: *Cardiac myxomas are the most frequent cardiac tumors. The aim of study is to describe the incidence, clinical symptoms, investigation findings and surgical management of cardiac myxomas.*
Methods: *From July 2015 to July 2017, 15 patients of primary intracardiac myxoma underwent surgical excision at our institute. Their age ranged from 40 years to 65 years with predominance of female patients (73.3%). Surgical resection was done in all the cases via biatrial approach or right atriotomy. Post-operative echocardiogram was done in all patients before discharge. Maximal follow-up of two years and minimum follow-up of 6 months was done after surgery.*
Results: *The tumors presented in a variety of ways, namely, dyspnea (66.7%), chest pain (26.27%) and transient ischemic attack (6.6%), beingthe common modes of presentation. The most common location for the tumor was the left atrium (80%) with the fossa ovalis being the most common (66.7%) site of attachment. No mortality or any significant morbidity was found. On follow-up all patients were in NYHA class 1 and their echocardiography showed good ventricular function with normal pulmonary artery pressure with patch in situ. No recurrence was reported till date.*
Conclusion: *Early diagnosis and surgical resection of cardiac myxomas contributes to excellent prognosis and associated with low complications and recurrences rate. Regular long-term follow-up should be done in all patients with cardiac myxomas.*
Keywords: *Cardiac myxomas, rightatriotomy, echocardiography.*

Introduction

Cardiac myxoma is the most common primary heart neoplasm.[1] The most common site of attachment is on the left atrial side of the fossa ovale. However, they can be found attached to the valves, in the ventricles or anywhere in the right or left atrium as well.[2] Myxomas can affect all age group but are commonly seen between the third and sixth decade of life with a female predominance.[3] Clinical manifestations of cardiac myxoma are numerous depending on tumor location, size, shape, growth rate and patient response. These tumors can cause chest tightness, shortness of breath, chest pain, fever,

anemia, fatigue, joint pain, weight loss, cachexia and other systemic reaction, while some patients may be asymptomatic.[4] Diagnosis of cardiac myxomas has been established by transthoracic echocardiography (TTE) or trans esophageal echocardiography (TEE) Gross total resection is considered the best treatment modality for cardiac tumors and achieves satisfactory clinical outcomes. Myxoma may recur in patients with familial tumors or patients who undergo incomplete surgical resection. Recurrence after the surgical resection of primary lesions has been observed in 1 to 4% of sporadic cases and 12 to 22% of familial cases.[5]

Methods

Between July 2015 and July 2017, 15 patients were diagnosed with primary cardiac myxomas. These patients ranged from 40 to 65years in age, with a mean age of 54 years. 11 out of 15 patients were female (73.3%). Details history was taken and clinical examination was done. All patients underwent echocardiography to determine the size and location of the tumor. Surgery was performed using a median sternotomy and biatrial approach or right atrial approach under cardiopulmonary bypass. Post-operative echocardiogram was done in all patients before discharge. Maximal follow-up of two years and minimum follow-up of 6 months was done after surgery.

Results

The most common presenting symptoms were dyspnea (66.7%), chest pain (26. 7%), pain and paraesthesia of the limbs (6.6%)(Table 1}. Nonspecific symptoms such as weight loss or fever were uncommon. No any other comorbidity was found. Transthoracic echo was performed in all cases. A total of 80% of myxomas were located in the left atrium, followed by the right atrium. (20%) When tumors were located in the left atrium, most were attached to the fossa ovalis (66.7%) by a pedicle; the rest were in another area of the atrial septum (33.3%) (Table 2). Mean tumor size was 4.3cm with the range 1.2 – 8.4 cm. In our study 13 (86.7%) were pedunculated myxomas while 2 (13.3%) were sessile.

Surgical Treatment

The operative approach for all cases was through a median sternotomy and bicaval cannulation for establishing cardiopulmonary bypass. The myxomas were resected with full thickness excision of the septum with 0.5–1 cm margin around the stalk. The heart was inspected for other myxomas and defects.

In the cases of left atrial myxomas, biatrial approach was used. Mass was explored via left atrial incision and was removed from right atrial approach. The full thickness of the atrial septum was excised in cases with lesion in the region of the fossa ovalis. In other cases, the extent of resection of normal tissue was evaluated on an individual basis. The atrial septal defect created by resection was closed with a Dacron patch or, less commonly, by primary closure.

Right atriotomy was used in right atrial myxomas. The right atrium was opened and afterdefining tumor attachments, it was excised with the adjacent portion of atrial septum.

The cross-clamp and cardiopulmonary bypass time were 48.1 ± 31.4 and 69.2 ± 29.3 min, respectively. All excised masses were histopathologically confirmed to be myxomas.

Postoperative echocardiography showed complete excision of the tumor in all patients. All patients were discharged uneventfully with no major post-operative complication. These patients were regularly followed up ranging from sixmonths to two years. All patients are doing well with no recurrence or any other complication.

Table 1: Presenting symptoms/signs in cardiac myxomas

Symptom/Sign	Number of patients (n)	Percentage (%)
Dyspnea	10	66.7
Chest pain	04	26.7
Limb paresthesia (neurological symptoms)	01	6.6
Palpitation	-	-
Non-specific symptoms (fever, weight loss etc)	-	-

Table 2: Location of cardiac myxomas

Tumour Location	Number of cases(n)	Percentage (%)
Left Atrium	12	80
Fossa ovalis	08	66.7
Atrial septum (no fossa ovalis)	04	33.3
Other atrial sector	-	-
Right Atrium	03	20
Left Ventricle	-	-
Right Ventricle	-	-

Discussion

Myxoma is the most common primary cardiac tumor, which frequently occurs in middle age and is more common in women than in men[6]. In our data, the mean age of the patients was 54 years at the time of surgery. In addition, female predominance (73.3%) was also present in our study

Clinical manifestations may vary among studies. In our study, dyspnea was the most common presenting symptom in 66.7% cases followed by chest pain in26.7% cases and neurological symptoms in 6.6% cases. The preoperative symptomatology stated by Dein et al was dyspnea in 88%, neurological symptoms in 22% and 11% with constitutional manifestations.[7]

Although histologically benign, these tumors can be lethal due to their location in the circulatory system. The predominant site of tumor implantation in our study was the fossa ovalis of the septum in the left atrium (66.7%), similar to that described in other studies.[8,9]

Echocardiogram is the imaging modality of choice for the diagnosis of cardiac myxomas. Echocardiogram is helpful in describing the morphologic characteristics of these tumors, which predicts patients at higher risk of having an embolic complication and those who may require surgery as soon as possible after diagnosis.[10]

En bloc resection is the gold standard treatment for cardiac myxomas.[11,12] The outcomes of total resection also depend on the tumor location and pathological characteristics. It can be performed successfully for most tumors in the left or right atrium, especially myxomas with the tumor pedicle connected to the atrial septum. Crawford performed the first surgery in a patient with a left atrial myxoma in 1954.[13] In our study, the right atrial and biatrial approaches were used and the left atrial tumor was resected through the atrial septum followed by simple closure. Currently, this technique is performed through a median sternotomy on cardiopulmonary bypass with prior aortic and bicaval cannulation and moderate hypothermia. Because of low mortality and low risk, this technique is most commonly used.[14] No major post-operative complication was noted in our study.

Recurrence of cardiac myxomas has been reported in the literature occurring within a few months to several years after the initial surgical excision with most occurring in the first 4 years.[15] In our series, we did not find any recurrence during follow-up till now after the excision of the tumor thus suggesting that recurrence of cardiac tumors remains low.

Conclusion

Cardiac myxomas are the most common cardiac tumors with the more female patients and left-sided tumor predominance. Tumor recurrence is rare and excellent long-term results in terms of symptoms and mortality can be achieved with open surgical resection. A close postoperative long-term follow- up and observation of these patients are recommended.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

1. Di Vito A, Mignogna C, Donato G. The mysterious pathways of cardiac myxomas: a review of histogenesis, pathogenesis and pathology. *Histopathology* 2015; 66: 321–332.
2. Garatti A, Nano G, Canziani A, Gagliardotto P, Mossuto E, Frigiola A, *et al.* Surgical excision of cardiac myxomas: Twenty years experience at a single

institution. Ann ThoracSurg 2012;93:825-31.
3. Yu K, Liu Y, Wang H, Hu S, Long C. Epidemiological and pathological characteristics of cardiac tumors: A clinical study of 242 cases. Interact Cardiovasc ThoracSurg 2007;6:636-9.
4. Strecker T, Agaimy A, Zelzer P, Weyand M, Wachter DL. Incidental finding of a giant asymptomatic right atrial tumor.Int J Clin Exp Pathol 2014; 7:4528–4530.
5. Reynen K. Cardiac myxomas. N Engl J Med 1995; 333:1610–1617
6. Bjessmo S, Ivert T. Cardiac myxoma: 40 years' experience in 63 patients. Ann Thorac Surg. 1997;63:697–700.
7. Dein JR, Frist WH, Stinson EB, et al. Primary cardiac neoplasms. Early and late results of surgical treatment in 42 patients. J Thorac Cardiovasc Surg 1987;93(04):502–511
8. Ha JW, Kang WC, Chung N, et al. Echocardiographic and morphologic characteristics of left atrial myxoma and their relation to systemic embolism. Am J Cardiol 1999;83:1579-82.
9. Premaratne S, Hasaniya NW, Arakaki HY, Mugiishi MM, Mamiya RT, McNamara JJ. Atrial myxomas: experiences with 35 patients in Hawaii. Am J Surg 1995;169:600-3.
10. Pinede L, Duhaut P, Loire R. Clinical presentation of left atrial cardiac myxoma. A series of 112 consecutive cases. Medicine (Baltimore) 2001;80:159-72.
11. El Bardissi AW, Dearani JA, Daly RC, et al. Analysis of benign ventricular tumors: long-term outcome after resection. J Thorac Cardiovasc Surg 2008;135:1061-8.
12. Pacini D, Careddu L, Pantaleo A, et al. Primary benign cardiac tumours: long-term results. Eur J Cardiothorac Surg 2012;41:812-9.
13. Craford C. Discussion of Glover R. The technique of mitral commisurotomy. In: Lam CR, editor. Cardiovascular surgery: studies in physiology, diagnosis and techniques. International Symposium on Cardiovascular Surgery; 1955 Mar; Henry Ford Hospital, Detroit. Philadelphia: Saunders; 1955 Mar.
14. Kuroczyński W, Peivandi AA, Ewald P, Pruefer D, Heinemann M, Vahl CF. Cardiac myxomas: short- and long-term follow-up. Cardiol J 2009;16:447-54.
15. McCarthy PM, Piehler JM, Schaff HV, Pluth JR, Orszulak TA, Vidaillet HJ Jr, *et al*. The significance of multiple, recurrent and "complex" cardiac myxomas. J ThoracCardiovascSurg 1986;91:389-96.