Section: CVTS

Original Research Article

RESULTS OF SURGERY IN ATRIAL MYXOMA

Shyam Singh[1], I A Mir[1], Puja Vimesh[2], Mohit Arora[1], Prabhdeep Singh Sudan[1], Vivek Gandotra[1], Rouf Gul[1], Vikas Gupta[2]

[1]*Department of Cardiovascular and Thoracic Surgery (CVTS), Super-Specialty Hospital Government Medical College, Jammu and Kashmir, India.*
[2]*Department of Anesthesia (CTA), Super-Specialty Hospital Government Medical College, Jammu and Kashmir, India*

Received *: 02/02/2026*
Received in revised form *: 21/03/2026*
Accepted *: 09/04/2026*

Corresponding Author:
Dr. I A Mir,
Department of Cardiovascular and Thoracic Surgery (CVTS), Super-Specialty Hospital Government Medical College, Jammu and Kashmir, India.
Email: ishtyak_mir@rediffmail.com

DOI: 10.70034/ijmedph.2026.2.245

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (2); 1471-1475

ABSTRACT

Background: Cardiac myxoma, a seemingly benign disease can present with a grim phenomenon, life threatening emergency that requires prompt management. Interatrial septum left atrial (LA) side is the most common site of origin. Myxomas can occur at any age but mostly after 4th decade and are more in female patients. Clinical presentation is variable and patients can present with cardiac symptoms or systemic manifestations, clinical findings may or may not be supportive. Echocardiography is the investigation of choice and surgical excision the definitive treatment. Accurate diagnosis, early surgical intervention gives excellent results.

Materials and Methods: The study was conducted in the super-specialty Department of a tertiary care Hospital. All the patients who had diagnosis of cardiac myxoma irrespective of age, sex and associated diseases were included in the study. Transthoracic echocardiography was the initial investigation of choice. All were operated under cardiopulmonary bypass, myxoma was approached by right atriotomy, tumor along with its base was excised, and the defect so created was closed directly or a patch repair was done.

Results: Majority were in 5th decade of life, females were more. Presentation included Palpitations, dyspnea, edema, weakness. Clinical examination revealed anemia, dyspnea, edema, audible murmur, weakness of limb. Echocardiography established diagnosis in all. Left atrium (LA) was the common chamber involved. Interatrial septum on left atrial side was the common site of myxoma origin. All had uneventful post-operative period, and there was no mortality.

Conclusion: Atrial myxoma, though very rare, can present as an emergency, urgent and accurate diagnosis, followed by excision under cardiopulmonary bypass gives excellent results.

Keywords: Myxoma, Left atrium, Echocardiography, Excision.

INTRODUCTION

Primary neoplasms of the heart, mostly (75%) benign (potentially curable), are rare forms of cardiac disease. These neoplasms are of interest because of their low incidence, protean clinical manifestation with excellent outcome if benign. After 2015, myxoma is now not the most frequent primary tumor of heart, but still constitutes significant number of all tumors and cysts and mostly arises from interatrial septum (75%), LA side.

Myxoma arise from the endocardium as a polypoid, often pedunculated that extends in to a cardiac chamber, are derived from multipotential mesenchymal cells, of the subendocardial layer and imitate primary mesenchyme. Myxomas occur in patients of all ages, but incidence is more in third to sixth decade of life with slight predominance in women. Though benign their recurrence and metastatic potential have been noted. (Gerbode et al 1967). Clinical presentation of myxomas may be obstructive, embolic and or with constitutional symptoms, and may include, dyspnea on exertion, palpitations, congestive heart failure, syncope, hemoptysis, embolic events, atypical chest pain, paroxysmal nocturnal dyspnea, fever, fatigue, weight loss, night sweats, severe dizziness, seizures, peripheral edema, or sudden death. Clinical findings

may point to cardiac ailment but not to specific diagnosis.

The laboratory investigations may reveal a raised erythrocyte sedimentation rate, pulmonary emboli, elevated globulins, abnormal chest skiagram, polycythemia, anemia, pulmonary artery hypertension, mitral / tricuspid valve disease, in addition to an atrial mass. Transthoracic echocardiographic (TTE) is the investigation of choice but transesophageal echocardiography (TEE) provides details of exact tumor attachment and additional morphologic features, information that is valuable for planning surgical management. In some computed tomography (CT), radionuclide / magnetic resonance imaging (MRI) and angiocardiographic studies may also be done and are of value.

Despite the trend towards minimally invasive intracardiac operations, myxoma is a condition where even the jugular venous cannulation before operation may be avoided. Friability of the tumor and chances of embolization limit the role of mini access surgery, but the role of robotic surgery has not been disputed. Surgical excision with repair of the defect so created is the management of choice, peri-intra and post-operative events can be managed successfully with excellent outcome. Patients are to be followed up in outpatient department, evaluated for recurrence at intervals. Long term results are excellent. The study deals with management of patients treated for cardiac myxoma, and it is observed that myxoma is the most common benign tumor of heart.

MATERIALS AND METHODS

The study was conducted in a tertiary care hospital, all the patients had been referred from other Departments, with a diagnosis of cardiac disease. A thorough history, detailed general and systemic examination was contemplated in all. Transthoracic Echocardiography (TTE) was the investigation of choice, in some Doppler studies, Computed tomography, Magnetic Resonance Imaging and Radionucleotide studies were also conducted. Heart was approached through median sternotomy, and myxoma through right atriotomy, all the patients were operated under cardiopulmonary bypass, cannulation was done gently, aorta cross clamped before giving cardioplegia, and the myxoma was approached through right atriotomy. Excision of the tumor along with its base was done, the defect so created was repaired directly or a patch closure was done. Thorough saline irrigation / suction of atria and ventricle was done to remove all the tumor emboli. The intra / peri and post-operative period was monitored for any morbidity and mortality. Patient with PTFE patch were put on antiplatelet drugs for six weeks. All the patients were followed in outpatient department. Follow up TTE was done at 2 and 72 months after operation.

RESULTS

71.42% of the patients were female, 14.28% were in fifth decade and 28.57% in fourth, sixth and seventh decade of life respectively. Neurological events before admission were reported by 28.57% and embolization by 14.28% of the patients. 28.57% were hypertensive, 14.28% were diabetic on antihypertensive and oral hypoglycemic drugs / insulin. Presentation was mostly with dyspnea, palpitations, orthopnea, paroxysmal nocturnal dyspnea, dizziness, intermittent positional syncope, weakness, lethargy, fatigue, loss of appetite / weight, anorexia, low grade fever, anemia, limb pain / weakness and arthralgia. Examination revealed audible murmur in all, weakness of limb, vascular insufficiency, atrial fibrillation, anemia, hepatomegaly, pedal edema and features of failure. TTE evidence of LA myxoma, Figure-1 and 2, was present in all, 14.28% had features of vascular embolization and 28.57 ischemic infarct. Patients were sick, 57.14% in NYHA functional class III, and 28.57% patients were in NYHA functional class II.

Besides decompensating left ventricular symptomatology, embolization and the neurological complications were the major problems. Heart was approached by median sternotomy, and myxoma by right atrial (RA) approach. 85.71% had myxoma on interatrial septum LA side, 14.28% had myxoma away from interatrial septum, but in LA only. Complete excision of the tumor with its base and adjacent septal wall was done in all, Figure-3, and the excised specimen is shown in Figure 4. The defect so created was closed directly in 57.14% and in others patch closure of the defect was done. There were no pre-peri-intraoperative complications, and post-operative period was uneventful. Grossly tumor appeared as myxoma only, and histopathology confirmed the diagnosis of myxoma in all. At a follow-up of two month none of the patient had features of peripheral emboli clinically or on doppler study, however, 14.28% had residual neurological deficit even at a follow-up of more than 2 years. All the patients had improved NYHA functional class, and by six months post operatively 85.71% were in functional class II. There were no deaths.

Figure 1

Figure 2

Figure 3

Figure 4

DISCUSSION

Comments: Primary benign cardiac tumors account for 75 to 90 percent of all the cardiac tumors,[1] and papillary fibroelastoma (PFE) has been recognized as the most common cardiac neoplasm.[2,3] Cardiac myxomas are benign tumors of uncertain etiology, but the concept that they are organized thrombus has been refuted,[4] and it is most commonly believed that myxomas are neoplastic and are derived from a primitive mesenchymal cell.[5] Grossly these tumors present as polypoidal masses projecting into a cardiac chamber from the endocardial surface, are globular in shape and have soft gelatinous consistency. Of all the benign cardiac tumors myxoma are of importance because of their presentation, serious complications, in particular intracardiac obstruction, pulmonary and systemic embolization. Cardiac myxoma may take their origin from entrapped embryonic foregut tissue,[6] Prichard structures,[7] may also be metaplastic, thrombotic, cardiac stem cells and or inflammatory in origin. Almost 10% of cardiac myxomas are inherited via a autosomal dominant condition called Carney's complex syndrome. Myxoma can develop in any of the cardiac chambers but mostly in left atrium, followed by right atrium (RA), right ventricle (RV) and the valves.[8] More female patients 71.42% in the present study, are in accordance to the observations, that myxoma occurs more frequently in women than in men.[9] Certainly, the results cannot be compared to other studies because of smaller number of patients. Though the observations from the present study are not in accordance to other studies, it is certainly significant that most of the patients were females. In present study patient were in fourth through seventh decade of life, which does not correspond to the fact that myxoma mostly occur in 4th and 5th decade of life, but age is no bar and even children's can be diagnosed to have such a disease.[10] Again, much inference cannot be drawn from the present study because of smaller number of patients.

Symptomatology is related more to hemodynamic effect of tumor, and is in accordance to the reported observations of other studies.[11] Pedunculated polypoid tumors frequently present with clinical manifestation associated with intracardiac obstruction, the symptoms of LA myxoma include regurgitation, mitral valve obstruction, left sided heart failure, dyspnea at rest and on exertion, paroxysmal nocturnal dyspnea and pulmonary edema. Left atrial myxoma with systemic embolization usually a fatal complication has been reported to occur in 25 to 50 percent of patients preoperatively, similar observations have been made in other studies.[12-14] Constitutional symptoms of atrial myxoma include physical weakness, lethargy, fatigue, weight loss, anorexia, persistent unexplained low-grade fever, arthralgia and anemia and are similar to the observations in present study. Clinical signs may vary from patient to patient, but our observations are invariably in accordance to other studies.[15,16] Since the first North American application of ultrasound to visualize cardiac neoplasms in 1968, echocardiography has become the most important non-invasive modality to diagnose myxomas with a sensitivity of 100%,[17] both TTE and TEE provide details of tumor location,

dimensions, shape, and connections to surrounding structures,[18] however, TEE is more informative, and the superior diagnostic utility of TEE is due to the proximity of esophagus to the heart, lack of intervening lung and bone, and the ability to use high-frequency imaging transducers that afford superior spatial resolution, and helps in planning surgical management, however, we have not found any difficulty in diagnosing these patients on TTE, and the pictures are self-explanatory, (a video of TTE demonstration of LA myxoma during systole and diastole with constriction in middle because of the mitral valve compression). C T scan is a useful diagnostic tool especially in patients where MRI is not available, but MRI is preferred which in addition to furnishing detailed anatomic images, the T1- and T2- weighted sequences reflects the chemical microenvironment with in a tumor, thereby offering clues as to the type of tumor that is present, cardiac mural infiltration, pericardial involvement, and extracardiac tumor extension. Vascular doppler studies help in diagnosing any vascular embolization to limbs vessels. Interatrial septum as the common site of myxoma origin is established in majority of the studies. Almost all but 14.28% of the myxomas arising from interatrial septum LA side is quite high, and these findings differ from other studies.[19] Early surgical intervention for atrial myxomas which is done on urgent basis, mitigates morbidity and usually offers cure. Median sternotomy for heart and right atriotomy for myxoma was the approach of choice. In patients with right atrial myxoma both cavae should be cannulated directly or venous drainage should be provided by superior vena cava and femoral vein cannulation, such an approach was not needed because there was no tumor from right atrium side. Our observations are in accordance to studies, where only right atriotomy approach has been used to excise the myxoma, but are at variance to the technique, where a longitudinal incision in the left atrium, posterior to interatrial groove is first performed, and the tumor visualized, the exposure of the tumor is facilitated by a simultaneous right atriotomy, with excision of a full-thickness portion of the interatrial septum, including the fossa ovalis,[20-22] The myxoma which is attached to the fossa ovalis, is removed through right atrial incision if small or through left atrial incision if large, the bi-atrial approach is particularly useful if the base of the left atrial myxoma is sessile.[23] Macroscopically myxomas were pedunculated, polypoid masses, focally cystic, friable, pink to tan with smooth glistening surfaces, histopathology confirmed cardiac myxoma in all. No recurrence was documented at a follow up of 2 months to six years, which is contrary to the studies where 4 to 5 percent recurrence has been reported,[24] but in large series no recurrence has been reported.[25] No deaths in the present study are at variance to studies, where less than five percent mortality is reported.[26]

CONCLUSION

In conclusion atrial myxoma though rare, can present with fatal complications, clinical presentation is not specific, diagnosis is made by TTE, in case of doubt other modalities of investigation should be used, once a diagnosis of atrial myxoma is made, surgery should not be delayed, jugular cannulation should be avoided, tumor should be approached through right atriotomy, excised along with its base, thorough irrigation, suction of all the chambers should be done, the defect so created should be closed by direct or patch repair. Patients must be followed at intervals and screened for any recurrence.

REFERENCES

1. Burke A, Tavora F. The 2015 WHO classification of tumors of the heart and pericardium. J Thorac Oncol 2016; 11(4): 441-52.
2. Kumar V, Abbas A K, Aster J C, Turner J R, Robbins S L, et al. editors. Robbins and Cotran pathologic basis of disease. Tenth edition. Philadelpha, PA; Elsevier; 2021; 579-581.
3. Maleszewski JJ, Basso C, Bois MC, Glass C, Klarich KW, Leduc C, et al. The 2021 WHO classification of tumors of the heart. J Thorac Oncol. 2022; 17(4): 510-8.
4. Burke A P, Virmani R. Cardiac Myxoma; A clinicopathologic study. Am J Clin Pathol 1993; 100; 671-680.
5. Seidman JD, Berman JJ, Hitchcock CL, et al; DNA analysis of cardiac myxomas: Flow cytometry and image analysis. Human Pathol. 1991; 22: 494-500.
6. Scalise M, Torella M, Marino F, Ravo M, Giurato G, Vicinanza C, et al. Atrial Myxoma arise from multipotent cardiac stem cells, Eur Heart J. 2020; 41(1): 4332-45.
7. Amano J, Kono T, Wada Y, Zhang T, Koide N, Fujimoni M, et al. Cardiac myxoma: its origin and tumor characteristics. Annals Thorac Cardiovasc Surg. 2003; 9(4):
8. Angela P, Giovanni B. cardiac myxoma. Pathologyoutlines.com [Internet]. 2024. Available from website, https://www.pathologyoutlines.com/topic/hearttumormyxoma.html.
9. Samanidis G, Khoury m, Balanika M, Perrea DN. Current challenges in the diagnosis and treatment of myxoma. Kardiol Pol. 2020; 78(4): 24.
10. Manoj Agny, Mark Reller, Adnan Cobanoglu. Tricuspid valve myxoma in a pediatric patient. 10 years follow up after resection. Ann ThoracSurg 1999; 67: 1803-4
11. Centofanti P, Di Rosa E, Deorsola L, Dato GM, Patane F, LaTorre M, et al. Primary cardiac tumors. Early and late results of surgical treatment in 91 patients. Ann ThoracSurg 1999; 68: 1236-41.
12. Goodwin JF. Spectrum of cardiac tumors. Am J cardio 1968; 21: 307.
13. Fyke FE, Seqard JB, Edwards WD, Miller FA, Reeder GS, Schattenberg TT, etbal. Primary cardiac tumors: experience with 30 consecutive patients since introduction of two dimentional echocardiography. J Am Coll Cardiol 1985; 5: 1465.
14. Tipton BK, Robertson JT, Robertson JH. Embolism to the central nervous system from cardiac myxoma: report of two cases. J Neurosurgery 1977; 47: 937
15. Peter MN, Hall RJ, Cooley RD, Leachman RD, Garcia E. The clinical syndrome of atrial myxoma: JAMA 1974 Nov; 230(5): 695-701
16. Misago N, Tanaka T, Hoshii T, Suda H, Itoh T. Erythematous papule in a patient with cardiac myxoma: a case report and review of literature. J dermatol 1995 Aug; 22(8): 600-5.
17. Mundinger A, Gruber HP, Dinkel E. Immaging cardiac mass lesions. Radiol Med 1992; 10: 135-140.
18. Cho J, Quach S, Reed J, Osian O. Case report: Left atrial myxoma causing elevated C-reactive protein, fatigue and

fever, with literature review. BMC Cardiovasc Discord. 2020; 20(1); 119.
19. Di Vito A, Mignogna C, Donato G. The mysterious pathways of cardiac myxoma: a review of histogenesis, pathogenesis and pathology. Histopathology. 2015; 66(3): 321-332.
20. Semb BKH: Surgical consideration in the treatment of cardiac myxoma. J Thorac Cardiovasc Surg 1984; 87: 251-259.
21. Bortolotti U, Mazzucco A, Valfre C, Velente M, Pannelli N, Gallucci V: Right ventricular myxoma: Review of the literature and report of two patients. Ann ThoracSurg 1982; 33: 277-84.
22. Bortolotti V, Maraglino G, Rubino M, Santini F, Mazzucco A, Milano A, et al; Surgical excision of intracardiac myxoma: A 20 year follow up. Ann ThoracSurg 1990; 49: 449-453.
23. Castells E, Ferran V, Octavio de Toledo MC, Calbet JM, Benito M, Fontanillas C, et al: Cardiac myxoma: Surgical treatment, long term results and recurrence. J Cardiovasc Surg 1993 Feb; 34 (1): 49-53.
24. Castells E, Ferran V, Octavio de Toledo MC, Calbet JM, Benito M, Fontanillas C, et al: Cardiac myxoma: Surgical treatment, long term results and recurrence. J Cardiovasc Surg 1993 Feb; 34 (1): 49-53.
25. Livi U, Bortolotti U, Milano A,Valente M, Prandi A, frugoni C, et al: Cardiac myxomas: Results of 14 years'experience. J Thorac Cardiovasc Surg 1984 Jun; 32 (3): 143-47.s
26. McCarthy PM, Piehler JM, Schaff HV, Pluth JR, Orszulak TA, Vidaillet HJ Jr, et al. The significance of multiple, recurrent, and "complex" cardiac myxoma. J Thorac Cardiovasc Surg. 1986; 91: 389.