

Original Article**A Snapshot on Myxoma Operation of 62 Patients at National Institute of Cardiovascular Diseases(NICVD), Dhaka, Bangladesh**

KS Islam

Abstract:

Background: Intra-cardiac mass, particularly myxoma operation is common at NICVD .Its frequency is about 1-2% among all operations done here. The main aim of this study was to analyze the different aspects of this tumour and its surgery on 62 patients operated over last three years (2015-2017).

Methods: It is a retrospective study .The data were collected over a period of 03 years (2015-2017) For this I studied the ward admission register, OT and ICU registers ,ICU flow charts, talked with the respective unit doctors to collect my data. Then the data were analyzed manually and by computer.

Results: Age range of the patients were from 7.5 years to 65years with a mean±SD (36.94±13.99). Male and female patient ratio were M:F=1:1.81.Myxoma were more common in the 4th and 5th decade of life in this study population .Preoperative time delay for operation after

hospital admission was 9±2.12days.All the operations were done as an elective procedure rather urgent or emergency procedure. Post operative mortality was around 12.90% among these patients. The causes of high mortality following myxoma operation were Low Output Syndrome, Congestive Heart Failure , Cerebral stroke and septicaemia.

Conclusion: Myxoma operation is common in NICVD. Most of our patients were dealt as a routine procedure. Their features and surgical procedure were similar with a little difference among the neighbouring countries. Our post operative outcome was a little bit worse (12.90% mortality) over the mentioned period. We need to find out the causes and to take care of these patients to reduce mortality in future.

Keywords: Intra-cardiac mass , Myxoma, NICVD, Bangladesh

(Bangladesh Heart Journal 2018; 33(2): 85-89)

Introduction:

Cardiac tumors are either primary (Â0.1%.) or secondary(1%). Those arising in the heart are primary They may be benign or malignant. Myxomas are the most common benign primary cardiac tumors. It is found in all age groups, in both sexes and most often occur in women in the4th to 5th decade of life. Generally they are sporadic. Myxomas are found as an autosomal dominant syndrome in around 7% cases in association with Carney complex which

comprises, myxomas, spotty pigmentation of the skin and endocrine hyperactivity. Here both sexes are affected equally and at any age, arise as single or multiple lesions in all chambers of the heart.They tend to recur after surgical excision in this complex.¹

Cardiac tumors present with variable clinical features like obstructive, embolic or systemic features. Intramyocardial tumors can trigger cardiac arrhythmia and may cause sudden death¹.

Generally they are polypoid, pedunculated having a smooth surface and sometimes covered with athrombus. Size varies from 1 to 15 cm but average about 5 cm in diameter.

Department of cardiac surgery, National Institute of Cardiovascular Diseases(NICVD), Dhaka, Bangladesh

Address of Correspondence: Dr. Kazi Shariful Islam MS (CV&TS), Associate Professor, Cardiothoracic Surgery, NICVD, Dhaka, Mobile: 01943221899, E-mail:kazishariful_islam@yahoo.com

DOI: <http://dx.doi.org/10.3329/bhj.v33i2.39302>

Copyright © 2017 Bangladesh Cardiac Society. Published by Bangladesh Cardiac Society. This is an Open Access articles published under the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC). This license permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Weight of approximately 70 gm. Histologically , polygonal or spindle shaped cells are found in a matrix of acid mucopolysaccharide .The cells may form capillary-like channels. These communicate with arteries and veins located at the base of the myxoma.¹

They are commonly found in the atria. Approximately 15% to 20% arise in the right atrium and 75% arise in the left atrium, and Most left atrial myxomas are located on the border of the fossa ovalis, but they can originate from any where on the atrial wall. Rest of myxomas are located in the ventricles.¹

Because most myxomas arise in the left atrium, systemic embolization is common, occurring in 30% to 50% of cases¹

National Institute of Cardiovascular Diseases (NICVD) is the oldest and tertiary care cardiovascular centre in this country. Peoples from all over the country and all social strata particularly poor and middle class of people come here for the treatment of cardiovascular diseases. Over last three years (2015-2017) around 1000 cardiac surgery cases of different varieties were done. Among all the operations done over this period, myxomas were around 2%.²

Only few studies were done on this issue in our country. This study will give us some insight about myxoma operation at our centre. It will also help us a little bit to understand the reasons for increased mortality over last three years. Thus it will aware us further to reduce the mortality of our myxoma patients as well as stimulate others to carry out further research in this field.

Materials & methods:

This is a retrospective study carried out in the department of cardiac surgery at NICVD, Dhaka Bangladesh during the period of 2015 to 2017. All the patients admitted either through OPD or directly referred to all the cardiac surgery units from cardiology units of NICVD for operation over that period were studied on the different aspects. 2D , Echo was the tool to diagnose Myxoma preoperatively. Some units also did second Echo just before operation to reconfirm the presence of Myxoma. Those patients refused operation after admission were excluded from the study. All the operating units followed standard protocol of CPB establishment. Regarding removal of myxoma from the cardiac chambers, they followed almost similar protocol. After

excisions of most of the myxomas, monopolar low power(10-15w) electrocautery was usually used here at the base of stalk. All informations or data were collected from admission file, the male and female ward registers, OT and ICU registers and OT notes. I also personally talked with

the doctors of the concerned surgical units, perfusionist of NICVD Dhaka to collect further informations. All the data were collected in a sheet of Microsoft Excel of a computer and then analysed manually by the calculator and Microsoft Excel of the computer to find out the results of my study. Numerical values were expressed as range, mean±SD and percentage Results: Age range of the patients were 7.5 years to 65 years with a mean±SD (36.94±13.99) years. Myxomas were more common in 4th to 5th decade (>50% patients were in this range) of life. Myxomas were more common in female patients with M:F=1:1.81 .

Table-I
Age range with relative occurrence of myxomas in different decades.

Age range(7.5-65 Years) Mean±Stdev(36.94±13.99) years	Number of patients	Percentage(%)
0-10	04	6.45
11-20	03	4.83
21-30	11	17.74
31-40	16	25.80
41-50	16	25.80
51-60	10	16.12
61-70	02	3.22
Total=	62	

Myxomas are most commonly located in left atrium then right atrium .There was single occurrence of -biatrial and right ventricular myxoma in my study population.

Table-II
Origin site of operated myxoma in the cardiac chamber Morphology of the myxomas:

Name of the cardiac chambers	Total no	Percentage (%)
Left atrium	54	87.09
Right atrium	06	9.67
Biatrial	01	1.61
Right ventricle	01	1.61
Left ventricle	00	00
Multicentric	00	00

Most of the LA and RA myxomas were ovoid to slightly irregular shape towards their apices. Majority of them were pedunculated 59 (95%) with attachment to the interatrial septum only few were sessile 3 (5%).

Majority of the stalks were attached to the IAS close to the limbus fossa ovalis

Their colours were grey to dark brown with some reddish spots almost in all cases.

Histopathology of the intracardiac masses were myxoma in almost all cases.

Most LA myxoma 91% (appx) were removed by standard LA tomy approach through interatrial groove. Around 5.55% of LA myxomas were removed by right atriotomy with trans-septal approach and around 4% (appx) LA myxoma were removed by biatrial/bicameral approach. RA, RV and biatrial myxomas were approached through RA tomy approach LA-Left Atrium, RA-Right Atrium, TV-Tricuspid valve, ASD-Atrial Septal Defect

About 84% myxomas were removed en-mass and 16% in piecemeal. After excision of the tumour the base of the stalk was cauterized in 90% cases. The other procedures were suturing of the surrounding endocardium in around 5% cases .direct suturing and pp closure in only few cases.

Patient waited for 9±2.12 days before operation after admission in the hospitals. After operation ICU stay was 6.5±3.53 days .Total hospital stay was 20.61±10.60 days.

The mortality was 12.90%. Low output syndrome was most common cause of mortality followed by CVA and CHF and infective endocarditis

Table-III
Approaches during surgical removal of atrial myxoma

Name of the approaches	Number of patients	Percentage(%)
For LA myxoma:		
LA tomy	49	90.74
RA tomy with trans-septal approach	3	5.55
Biatrial-/bicameral approach	2	3.70
For RA Myxoma- RA Tomy approach	6	100.00
For RV Myxoma-RA tomy with trans TV approach	1	100.00
For Biatrialmyxoma-RA tomy with creation of an ASD and removal of myxoma	1	100.00

Table-IV
Procedure of removal of intra-cardiac masses

Method of myxomaremoval from LA	No ofcases	Percentage(%)
En-mass	52	83.87
In picemeal	10	16.12
Dealing with the stalk of the tumour'		
Excision and EC of the base of the stalk	56	90.32
Excision with suturing of endocardium of IAS	03	4.83
Excision with rim of IAS with suture closure of ASD(Iatrogenic)	02	3.22
Excision with rim of IAS + pp closure of ASD	1	1.61

EC=Electro-cautaryofthebase , IAS=Inter atrial septum PP=pericardial patch closure, ASD=Atrial septal defect.

Table -V
Preoperative, ICU and hospital stay of operated patients

Stays in the hospital	(Min—Max) Days	Mean±SD (Days)
Preoperative stay	5-12	9±2.12
ICU Stay	1-12	6.5±3.53
Hospital Stay	1-81	20.61±10.60

ICU=Intensive care unit

Table-VI
Outcome variables

Variables	No of patients	Percentage(%)
LOS	3	4.83
Post operative CVA	2	3.17
Others (CHF)	2	3.17
Postop high fever(?septicemia)	1	1.61
Mortality	8	12.90%

LOS=Low output syndrome, CVS=Cerebrovascular accident ,CHF=Congestive Heart Failure, IE=Infective endocarditis,



Fig.-1: RV Myxoma in 2D echo



Fig.-2: Part of excised RV mass

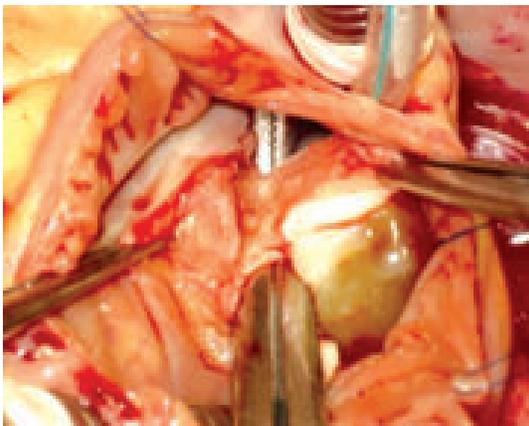


Fig.-3: Left atrial myxoma seen after incising interatrial septum⁴

Discussion:

In my study I found 62 cases of myxoma among about 3000 cardiac operations done at our centre over last three years and the incidence was around 2%. Age range was 7.5 to 65 years. Male female ratio was 1:1.81. Most of the myxomas were located in the left atrium (87%) with high incidence in 4th and 5th decade. Most of our patients were done as routine case with a post operative mortality 12.90%.

In an article as mentioned by Mandal et al Bangladesh, incidence of myxoma over a period of 17 years was 1.08%.³ In a centre of Kolkata, India, this incidence of myxoma was 0.6% without any post operative mortality or recurrence.⁴ In Rawalpindi, Pakistan. Cardiac myxomas constituted 0.40% of the total cardiac operations. They most commonly occurred in the fourth decade. In an article it is mentioned that they did routine operation on sixty-five patients whereas 28 patients with severe symptoms or embolic risk underwent emergency surgery.⁵ High incidence of my study is due to short study period (03 years) with high number of myxoma in the background of relatively small number (3000) of total cardiac operations over three years in comparison to them. Most of our cases were operated as routine procedure.

KyoSeon Lee et al, Korea wrote in their article that total 93 cases were performed over 30 years. Of the 93 patients Male:Female=1:2.1, our M:F was 1:1.81. their mean age of patients was 54.7±16.6 years whereas our patients mean age was 36.94±13.99 years. it means our patients are affected and operated at a relatively younger age. In their study the origin site of the tumor was the left atrium (LA) in 92.5%, right atrium in 4.3%, left ventricle in 2.2%, multiple myxomas in both atria and the right ventricle in one patient (1.1%). In our study we found origin site in LA in 87.09%, in RA 9.67%, Biatrial 1.61 and in RV 1.61%. We did not find any LV and multicentric myxoma during our study period.⁵

In an article it is mentioned that the mean intensive care unit (ICU) stay of 2.3±0.8 days and mean hospital stay of 7.9±1.8 days.¹⁰ Mean ICU stay of our patient was 6.5±3.53 days and hospital stay 20.61±10.60 days. Apparently in our hospital, both ICU stay and hospital stay were more than them. Moreover preoperative mean waiting time of our patients was 9±2.12 days. this aspect is not mentioned in their article. has been reported, resulting in a shorter length of hospital stay, and it is considered a safe and feasible method for atrial myxoma excision. There are few surgical techniques for myxoma resection other than midsternotomy like minimally invasive technique, endoscopic resection of the tumour and minithoracotomy with robot assisted surgery.^{6,7,8} However we performed all our cases through midsternotomy we removed myxomas as follows: By LA tomy 90.74%, RA tomy in 5.55% biatrial in 3.70%. They performed via a biatrial approach in 74.2%, atrial septotomy through right atriotomy in 17.2%, and left atriotomy only in 8.6%. Our per operative aortic cross clamp time

was 39.33 ± 10.28 min and cardiopulmonary bypass time was 48 ± 12.46 min. Their mean cardiopulmonary bypass time was 80.7 ± 39.0 min, and mean aortic cross-clamping time was 51.3 ± 27.5 min. Our surgical practice is a little bit different from them and our operation time is relatively shorter than their operative time.^{5,6}

They found a pedunculated (tumour attached with a pedicle) mass in 67.6%, while the other 32.3% had a sessile mass (tumour attached with a broad base). In our series myxomas were 85.48% cases pedunculated and 14.51% sessile. In their study simple myxoma resection including the endocardium and attached stalk without any need to repair was performed in 17 patients, direct closure of the defect area was performed in 47, and patch closure with autopericardium or prosthetic material was performed in 29 cases.⁶ In an article it is mentioned that pretumorous cells around the stalk should be destroyed by laser photocoagulation which obviates the need for a wide surgical resection.⁸ Since we did not have such facility in our institute we did low power electrocautery (10-15 w) using diathermy machine in 90.32% cases. We did suturing of the base of the stalk in 4.83%, excision and direct suturing of iatrogenic ASD in 3.22%, excision and pericardial patch closure of ASD in 1.61% cases.

In a journal it has been mentioned that the level of restoration of normal quality of life within 30 days after atrial myxoma surgery is excellent with the robotically assisted than conventional approach.¹¹

Regarding postoperative mortality of myxoma operation, different literature shows different results ranging from 0 to 8%.^{4,5,12} Our postoperative mortality for myxoma patient was 12.90%. Obviously it is high. We need to find out the more causes and to take necessary steps soon to reduce this mortality.

Conclusion: We are dealing most of our cases as a routine procedure. Our preoperative waiting time is more due to multiple reasons. ICU and hospital stays are also more than others. We must reduce preoperative waiting time and operate the patients as either routine or emergency considering the clinical scenario of the patient. We should pay meticulous attention during and after operation to reduce mortality. We should improve our documentation and we should continue research on it. In future for better outcome we should adopt advanced technology when they will be available at our centre.

Acknowledgement:

I acknowledge the contribution of all the doctors of cardiac surgery units including my one, OT & ICU nurses and technicians of NICVD, Dhaka Bangladesh as they performed the operations and took care of their patients during and after surgery.

Conflict of interest : I do not have any conflict of interest with any one to disclose.

References:

1. Gillinov A M, Liddicoat J R. Tumours of the heart. In: Sellke FW, delNido PJ, Swanson SJ Eds. Sabiston and Spencer Surgery of the chest. Philadelphia; Saunders Elsevier. 2010. p 1633
2. National Institute of Cardiovascular Diseases & Hospital. Cardiac surgery OT register (2015-2017). Dhaka.
3. Mandal SC, Islam M S, Rushe I KSSZ, Talukder SH, Uddin MM Hossain, MM, et al. Cardiac Myxoma- 17 Years Experience in a Tertiary Care Centre of Bangladesh. *Bangladesh Heart Journal* 2017; 32(2):85-88
4. Sanki PK, Hossain HZ, Charles A, Bhattacharya S, and . Sarkar UN. Cardiac myxoma: A surgical experience of 38 patients over 9 years, at SSKM hospital Kolkata, India. *South Asian J Cancer*. 2013; 2(2): 83–86.
5. Lee K S, Kim G S, Hung Y J, Jeong I S, Joo K N, Oh B S et al. Surgical resection of cardiac myxoma—a 30-year single institutional experience *J Cardiothorac Surg* 2017; 12(1):18.
6. Ciuffo GB. Minimally invasive excision multiple left atrial myxoma. Available from www.heartsurgery-Info.com. Accessed on 29 July 2018.
7. Deshpande RP, Casselman F, Bakir I, Cammu G, Wellens F, De Geest R. Endoscopic cardiac tumor resection. *Ann Thorac Surg*. 2007 Jun. 83(6):2142-6
8. Kesavuori R, Raivio P, Jokinen JJ, Sahlman A, Vento A. Quality of life after robotically assisted atrial myxoma excision. *J Robot Surg*. 2015 Sep. 9(3):235-41.
9. Jabbari O A, Saleh W A, Ramlawi B, Reardon M. Surgical Treatment of a Right Ventricular Myxoma. CTS net. <https://www.ctsnet.org/article/surgical-treatment-right-ventricular-myxoma> Accessed on: 22 July 2018.
10. Samanidis G, Perreas K, Kalogris P, Dimitriou S, Balanika M, Amanatidis G, Khoury M, Michalis A. Surgical treatment of primary intracardiac myxoma: 19 years of experience. *Interact Cardiovasc Thorac Surg*, 2011; 13(6):597-600.
11. Yang M, Yao M, Wang G, Xiao C, Wu Y, Zhang H, Gao C MD. Comparison of postoperative quality of life for patients who undergo atrial myxoma excision with robotically assisted versus conventional surgery. *The Journal of Thoracic and Cardiovascular Surgery, J Cardiovasc Thorac Surg* 2015; 150(1):152-7. <https://doi.org/10.1016/j.jtcvs.2015.01.056>,
12. Mishra A, Shah M, Sharma P, Kothari J, Malhotra A. Operative management of intracardiac myxomas: A single center experience. *Med J Armed Forces India*. 2014 Jan; 70(1): 5–9.