Cardiac Masses Preoperative Diagnosis Using Echocardiographic Imaging Approach In Patients Admitted To Cardiac Surgery Through 2013-2014 Cardiac Center-TMGH in Yemen.

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Abstract— Cardiac masses can cause significant morbidity and mortality. Cardiac masses are either being or malignant, (primary or secondary). **Aim:** The aim of this study was to investigate the pattern of intra-cardiac masses in all admitted patient to cardiac surgery during the period of study.

Methods: The cardiac surgery databases of cardiac center in Al-Thawrah General Hospital Sana'a from Jun 2013 to December 2014 were used to identify the patients who were diagnosed with cardiac tumors, and then the detailed medical records of these patients were retrospectively reviewed with special attention to confirming the presence, location, and histological type of the masses. There were 78 cases, with only one case confirmed histologically as malignant cardiac masse (fibro sarcoma).

Results: Among 601 cases in 2013, the intra-cardiac masses represent 53 cases (1.1%) of total cases, the female represent 70% & male 30%, left atrial thrombi account for (58.5%) , left atrial myxoma (24.5%) cardiac tumors represent (1.9%).

While in 2014 the total number of cardiac surgery was 495 cases, the intracardiac masses were counted to be 33 cases representing 8.9% of total numbers of surgery, the female represents 74% & male (26%), the left atrial thrombi (53%), left atrial myxoma (5%), vegetation (37%) & right ventricular tumor one case (5%).

Conclusion: In this study, describe the distribution of the entity of cardiac masses. Well-developed preoperative diagnostic techniques, especially echocardiography, have enabled earlier detection than was previously possible. Therefore, the number of patients who undergo surgery has increased, and long-term results have improved.

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1 Introduction

Cardiac masses can cause significant morbidity and mortality. Cardiac tumors are either being or malignant, (primary or secondary). Echocardiography is usually the first imaging modality to detect a cardiac mass. The echocardiographic localization of the mass and eventual clinical symptoms may be strongly suggestive of myxoma in the light of potential differential diagnosis such as thrombi. A few previous publications have reported on the usefulness of coronary angiography (CA) in further defining the diagnosis of myxoma by demonstrating signs of neovascularization. More recently it has been suggested that cardiac magnetic resonance imaging (MRI) may play a significant role by demonstrating specific findings in favor of myxoma. The estimated frequency of cardiac masses ranges from 0.0017-0.33% (1), In a review of 22 autopsy-based series of primary cardiac masses a frequency of 0.021% was identified among 731,309 patients, However, these data may have a high referral bias and may not reflect population-based incidence rates.

At the Mayo Clinic, the autopsy incidence of cardiac masses from 1915 to 1931 was 0.05%, but more than tripled to 0.17% between 1954 and 1970; again, referral bias may have played a role in this change. In another study (2), Incidence in autopsies 0.002-0.1 % Primary / Secondary (1 / 30) Primary: Benign (80 %) commonly LA myxomas. Malignant (20%) commonly Sarcomas, include; Rhabdomyosarcomas, Angiosarcomas, Fibrosarcomas, Liposarcomas, Mesotheliomas, and Leiomyosarcomas. Secondary (metastatic) usually involve the pericardium. The objective of this study to identify the pattern of intra-cardiac masses in all admitted patient to cardiac surgery in Al-Thawrah General Hospital during the period of study.

2 Materials and Methods

Study Area & time: The study will be performed in the Cardiac Centre in the –Thawrah Hospital, Sana'a from January 2013-January 2014

Study Design: This study was Retrospective descriptive study of medical records of all patients admitted to cardiac surgery in 2013 & 2014, all patient will undergo into echocardiographic examination using echo machine vivid- 7.

Study Size: All consecutive patient admitted to cardiac surgery during the period of study.
Ethics of Study: All data use confidentiality & without publication.
Limitation of Study: Shortage of database in the patient's files. There are no further confirmation investigatory tools to identify the cardiac masses,(CMR, C CT). There is a limitation about the histological type of each mass, loss of patients follow up after hospital discharge.
Data Collection Statistical Analysis: Based on a questionnaire which was design to collect the data, The questionnaire includes the following variables: Gender**,** Age**,** Residency, Diagnosis of the underlying disease**,** Clinical presentation of the involved patient**,** and Echocardiographic diagnosis**.** Normally distributed variables are shown as a percentage of the sample. All statistical tests were performed with SPSS for Windows version 15**.**

3. RESULTS & DISCUSSION

Most of patient of study are of active age group (30-50-year-old & <30-year-old), female gender took the upper hand in presenting patients, as they represent 70% of total patient of 2013 which did not differ a lot from the other works of literatures that also describe the female to be most of the disease distribution worldwide, this issue can explain the pattern of habits in the study sample as in our country most of the special habits are still considered to be sham to be practiced & in some governorates are not allowed. We also found most of our patients are of rheumatic heart disease (79.2%), while the congenital heart disease represents 1.9%.
Other study showed Congenital cardiopathies were found in 1,230 (73.8%) patients and acquired abnormalities in 429 (25.8%). Seven children (0.4%) had a combination of both types. Congenital heart defects (CHD) were dominated by a ventricular septal defect (VSD). Acquired heart disease was mostly rheumatic valvulopathies. Dyspnea on exertion was the most frequent presenting complaint (87.6%) (3).
Cardiac masses which is the aim of our study represent 18.9%, that considered being significant in comparing with other studies (4). In taking RHD in more details, we found that isolated mitral valve disease followed by mitral & aortic valves in the association, while the mitral & tricuspid valves represent 23% which is the least presentation, the study includes also a postoperative patient who returns back with cardiac masses in a different pattern.
Most of the post-operative patient are post double valve surgery of both mitral & aortic valve followed by isolated post mitral valve replacement & post aortic valve replacement in nearly equal percent, while those who post double valve & tricuspid valve repair are of least presentation. We found that thrombi are found in most of our patient & this finding are accepted as the RHD is per se is a major risk for cardiac thrombi formation, Surprisingly, the case concludes that the cardiac myxoma is presenting the second common form of intra-cardiac masses 24.5% while the vegetation of endocarditis represents 15.1%. other studies showed the failure rate for the treatment of tricuspid valve by using a suture or a ring annuloplasty at one month after surgery ranges from 8 to 15% (5, 6). Risk factors include: the severity of preoperative tricuspid regurgitation, presence of pacemakers, pulmonary hypertension, LV dysfunction, increased left ventricular remodeling, severe tethering of the tricuspid leaflets and the use of suture rather than ring annuloplasty. Nevertheless, many observational studies and RCTs compared the two types of annuloplasty (suture or ring) (7). The distribution of cardiac masses in cardiac chambers, we found the left atrium represents 52.8%, followed by mitral valve whether native valve or metallic valve, while the right ventricle including the mean pulmonary trunk represents 3.8%. as one case was found to have a tumor in the mean pulmonary trunk. Around 58% of the study sample are present with miserable complications, which varies from the stucked metallic valve, to be followed by ischemic cerebrovascular accident , ischemic limb, heart failure mainly in those who suffer from endocarditis & pulmonary embolism in those cases of right-sided masses, (tricuspid valve endocarditis in congenital heart disease). Other study showed the organic disease of the tricuspid valve (i.e., primary insufficiency) is most commonly caused by degenerative valve disease or bacterial endocarditis (generally in western countries), while rheumatic disease still remains the most prevalent form in developing countries (7). In studying cases of 2014 & comparing it with 2013, we can find similarity regarding the pattern of disease distribution in gender & form (i.e RHD, etc..) but they differ in number of cases, which was only 19 cases in 2014, the most reasonable cause of this big difference is due to political conflict that occurred in mid of 2014, which affect the flow of patient from other governorates, lack of resources in cardiac surgery at that time, lack of follow up by most of affected patients mainly due safety in most of governorates borders. Here, we can make a comparing table between both years of study considering the most important issues of concern.

Table 1: Described comparing between both year of study considering the most important issues of concern.

Point Of Comparing	2013	2014
Number Of Cases	**53**	**19**
Age	**<30 & 3-50**	**<30 & > 50**
Diagnosis	**RHD 79.2%**	**RHD 84%**
Pattern Of Valve Affection	**MVD 47%**	**M+A 36.8%**
Type Of Mass	**Thrombus 58.5%**	**Thrombus 53%**
Site Of Mass	**LA. 52.8%**	**LA. 42.1%**
Pattern Of Complication	**Stucked valve 20.8%**	**Ischemic CVA 26.3%**

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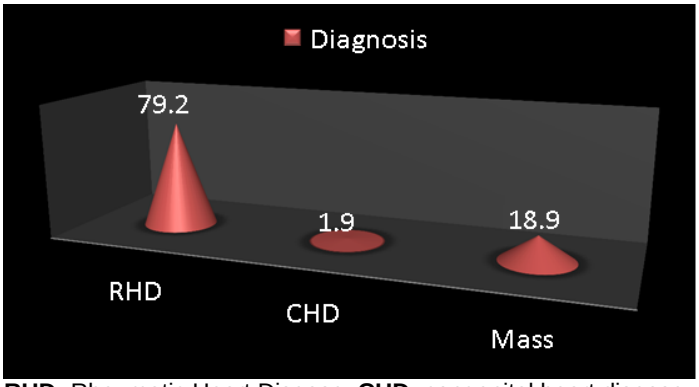
As reported in many series, the replacement of the tricuspid valve is generally adopted in reoperations, which represents itself an adjunctive intrinsic operative risk (8, 9). Some studies showed operative mortality of 18%. NYHA class, female gender, bilirubin level, preoperative diuretic dose, and preoperative hemoglobin level are all associated with increased operative mortality (9, 10).

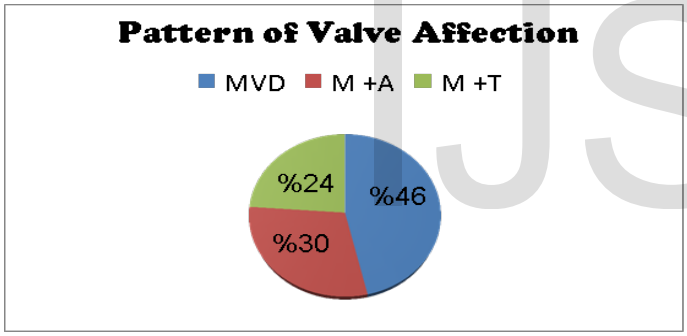
Figure 1: patients are of rheumatic heart disease in their diagnosis



RHD; Rheumatic Heart Disease. **CHD;** congenital heart disease.

We found most of our patients are of rheumatic heart disease in their diagnosis, which did not differ a lot from the other literatures that also describe the female to be most of disease distribution worldwide. While the congenital heart disease are of less percentage of presentation 1.9% in comparing with RHD, which represent 79.2%. Cardiac masses which is the aim of our study represent 18.9%, that considered to be significant in comparing with other studies (11,12).

Figure 2: Describe the pattern of disease affection of study sample inform of valve affected & who it is distributed



MVD; mitral valve disease. **M+A;** mitral & aortic. **M+T;** mitral & tricuspid valves.

In taking RHD in more details, we can describe the pattern of disease affection of study sample inform of valve affected & who it is distributed. As it is found to be more in isolated mitral valve disease followed by mitral & aortic valves in association, while the mitral & tricuspid valves represents 24% which is the least presentation.

4. CONCLUSION

In this study, we describe the distribution of the entity of cardiac masses. Abnormal masses (tumors, thrombi, and vegetation's) must be distinguished from normal cardiac structures that may mimic a mass such as the Eustachian valve, Chiari network, and crista terminals. Well-developed preoperative diagnostic techniques, especially echocardiography, have enabled earlier detection than was previously possible. Therefore, the number of patients who undergo surgery has increased, and long-term results have improved.

5. RECOMMENDATIONS

Establishment specialized centers for researches performance & analysis. Improvement of patient's database records that can facilitate the scientific activities & therefore improvement of health system outcome. Establishment of Follows up the system. Enhancement & activation of all medical diagnostic units, (histopathology, other radiological tools, etc..).

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Conflict of interest

The author confirms that this article content has no conflict of interest**.**

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