

Clinical, Echocardiographic and Echophonocardiographic Characteristics of the Atrial Myxomas in 22 Years Period

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SUMMARY

INTRODUCTION: Atrial myxomas are the most frequent benign tumors of the heart. Left atrial myxomas are about 3-4 times more frequent than right. Clinical findings reveal atrioventricular obstruction symptoms and signs, symptoms and signs of peripheral arteries or pulmonary artery embolisation and/or nonspecific symptoms. AIM: Review of atrial myxomas diagnosed at the Clinic of Cardiology in 20 years period and analysis of clinical characteristics, transthoracic echocardiographic (TTE), transesophageal echocardiographic (TEE), and M-mod echophonocardiographic findings. METHODS: TTE is performed in all, but TEE in 16 patients. Simultaneous M-mod echophonocardiographic examination were performed in 11 patients, when optional equipment was applicable. RESULTS: We found 24 atrial myxomas: 19 (79.2%) in left and 5 (20.810%) in right atrium. 21(87.5%) patients had some of the symptoms, but 3 (12.5%) were asymptomatic. TTE was performed in all patients, but we found 1 (2.4%) false negative result. TEE was performed in 14 (58.3%) patients. Echophonocardiographic recordings showed early diastolic tumor «plop» in 10 patients and unusual late diastolic tumor «plop» in one right atrial myxoma, which has not yet been described. CONCLUSIONS: TTE is a reliable method in diagnosis of atrial myxomas, but not in all cases, while TEE has been found as always reliable. Echophonocardiographic recording is useful for confirmation and understanding of auscultatory finding when applicable.

Keywords: atrial myxoma, TTE, TEE, echophonocardiography

1. INTRODUCTION

Atrial myxomas are the most frequent tumors of the heart. Left atrial myxomas are about 3-4 times more frequent than right (1, 2, 3, 4, 5, 6, 7). Myxomas are usually revealed by echocardiography when become enough large to give symptoms: left or right atrioventricular obstruction symptoms and signs 8-10, systemic 11-22 (5, 6, 7), respectively pulmonary embolisation 23-26 (8, 9) or nonspecific symptoms 27-32. Very rarely large myxomas are asymptomatic 33-34. TTE sometimes gives false negative findings, while TEE is almost always reliable 35,36. Echo-

phonocardiographic examinations have not been found in literature for years 32,38-39, although echophonocardiography can be useful in confirmation of auscultatory findings. Surgical removal of the myxomas is always successful, with rare recidives 40-42.

2. MATERIAL AND METHODS

The retrospective-prospective study included 24 atrial myxomas from 1986 to 2008: 13 (54.2%) men and 11(45.8%) women,

were aged 35.3±11. Twenty (83.3%) myxomas were found in the left and four (16.7%) in the right atrium. TTE was performed in all patients, TEE in 14 (58.3%), echophonocardiographic examinations in 11 (45.8%). 19 (79.2%) patients were operated in various surgical centers, while we have no further data for 5 patients.

3. RESULTS

Number of 21 (87.5%) patients had some of symptoms, but *three (12.5T%) were quite asymptomatic*. In two patients were found *previous brachial, respectively femoral arterial embolisation*. Twenty three myxomas (95.8%) were diagnosed by TTE, while one was not visible by TTE approach, inspite previous femoral artery embolisation, extracted myxomatous embolus and searching for left atrial myxoma by TTE. TEE was performed in 15 patients and in all cases the tumor was excellently visible. Simultaneous M-mod echophonocardiography was performed in 11 patients: eight with left and three with right atrial myxomas. Diastolic murmur of variuos intensity was found in 9 cases and early diastolic tumor «plop» in 8. In a large asymptomatic right atrial myxoma was found unusual late diastolic «plop», what was not yet described except in our case. In 2 patients systolic and diastolic were recorded. 19 myxomas were succesfully excised, but for 5 patients we have no further data.

	YES	NO
Symptoms	21 (87.5%)	3 (12.5%)
Embolisation	4 (16.6%)	20 (84.4%)
Visible by TTE	23(95.2%)	1(4.8%)
TEE	15 (61.3%)	9 (38.7%)
Echophonocardiography	11(42.9%)	13 (57.1%)
Operated	19 (84.4%)	5 (16.6%)

TABLE 1. Clinical, TTE and TEE, and ehophonocardiographic characteristics



FIGURE 1. LEFT ATRIAL MYXOMA-TTE-APICAL FOUR CHAMBRE VIEW: LEFT panel-diastole; RIGHT panel-systole with mitral regurgitation;MY-myxoma;LA-left atrium; LV;left ventricle;RV-right ventricle

No	Sex	Atrium	S1 splitting	S2-plop	Murmur
1	M	Left	0.06	0.11	Diastolic
2	F	Left	0.05	0.09	Diastolic
3	F	Left	0.06	0.10	-
4	F	Left	0.06	0.12	Systolic-diastolic
5	M	Left	0.04	0.11	Diastolic
6	F	Left	0.06	0.10	Systolic-diastolic
7	M	Left	0.06	-	Diastolic
8	M	Right	0.05	0.11	Diastolic
9	F	Right	0.04	0.10	Diastolic
10	F	Right	0.05	0.12	Diastolic
11	M	Right	0.06	0.22	Diastolic

TABLE 2. Echophonocardiographic Findings in Patients With Atrial Myxomas



FIGURE 2. TEE-LEFT ATRIAL MYXOMA. LEFT panel-systole; RIGHT panel-diastole

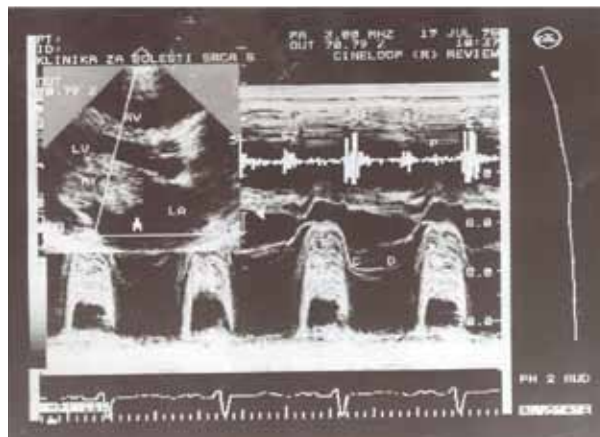


FIGURE 3. LEFT ATRIAL MYXOMA-ECHOPHONOCARDIOGRAPHIC FINDING. MY-myxoma;LA-left atrium;LV-left ventricle;RV-right ventricle; S1-first sound;S2-second sound;P-tumor "plop"

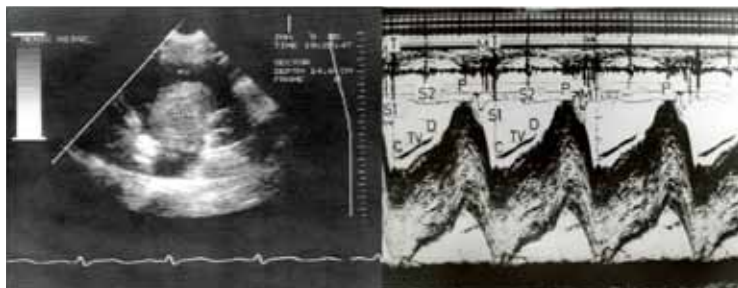


FIGURE 4. RIGHT ATRIAL MYXOMA WITH LATE DIASTOLIC TUMOR TUMOR "PLOP"- LEFT PARASTERNAL SHORT AXIS VIEW. LEFT panel-two dimensional view, RIGHT panel-echophonocardiographic recording. MY(TU)-myxoma;RA-right atrium;RV-right ventricle;S1-first sound;S2-second sound;P-tumor plop;M-mitral component of the first sound;T-tricuspid component. MY-miksom;RA-right atrium;RV-right ventricle

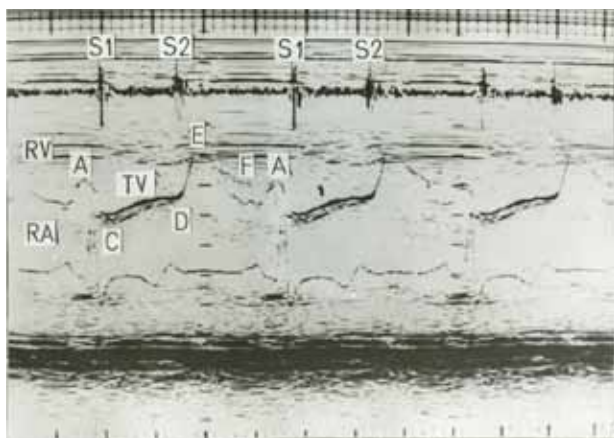


FIGURE 5. ECHOPHONOCARDIOGRAM AFTER SUCCESSFUL SURGICAL REMOVAL OF THE LARGE ASYMPTOMATIC RIGHT ATRIAL MYXOMA. PATHOLOGICAL SOUNDS DISAPEARED. Left parasternal short axis view. S1-first heart sound;S2-second heart sound;RA-right atrium;RV-right ventricle;TV-tricuspid valve

4. DISCUSSION

Atrial myxomas are the most common tumors of the heart. They grows slowly and then gives general symptoms, symptoms of atrioventricular ostia obstructon or embolisation of peripheral arteries in left or symptoms of pulmonary artery embolisation. We found 21 atrial myxomas in 17 year period. Some other authors described similar series and found 3-4 times more frequent tumor in left atrium 2-7,37-40 (18, 19, 20).Two patients were quite asymptomatic and myxomas were relieved when they applied for a new job.

was thought to be biatrial myxoma and by TEE36. Mehmood and al. found that live three-dimensional TTE essentially improves reliability and quality of TTE. We recorded echophonocardiographic finding in eleven patients. Wide splitting of the first soun was recorded in 9 patients. Tumor «plop» was found in ten patients: in early and mid diastole 0.09-0.12 seconds after the second sound. Wide splitting of the first sound was found in eight patients. Waxler and Nasser found similar results, but nobody found late diastolic

All were diagnosed by echocardiography, but we had 1 false negative findings by TTE.

TEE was performed because of previous embolisation and extraction of myxomatosus embolus from brachial artery, and left atrial myxoma was found. Vincelj found 21% false negative results by TTE, but found TEE quite reliable with 100% sensitivity and specificity, but Delange Segura described a case where an organized thrombus in the left atrium and a large hypertrophic trabecula in the trabeculated portion of the right atrium

tumor «plop» recorded 0.22 sec. after the second sound (S2) in our patient with a large asymptomatic right atrial myxoma. Diastolic murmur after tumor plop was recorded in ten patients, but systolic was found only in left atrial myxomas. Nasser and Waxler found diastolic murmors in almost all patients, but systolic only in left atrial myxomas. In some cases, there was need for mitral ring anuloplasty, because of massive mitral regurgitation after removing myxoma 43,44. In our patients there was not need for anuloplasty, although mild to moderate mitral regurgitation had been recorded by color TTE and murmurs had been documented by echophonocardiography before operation in two patients.

5. CONCLUSIONS

Atrial myxomas give simptoms when become large to make mechanical obstructions, or if they cause arterial or pulmonary embolisation Left atrial myxomas have auscultatory findings similar as mitral valvular stenosis, but improving of dyspnea in decubitus position is typical for left atrial myxoma. TTE is a reliable method in atrial myxomas diagnostics, but sometimes do not visualize the tumor. TEE is quite reliable in atrial myxoma visualisation. Echophonocardiographic recording is not indispensable, but it can be usefull, when appliable, in confirmation, understanding and documenation of atrial myxomas sound phenomena.

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