Atrial myxoma related myocardial infarction: Case report and review of the literature

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Atrial myxomas are the commonest primary cardiac tumors and usually affect the left atrium. Patients with atrial myxomas present with intracardiac obstruction, embolization to the pulmonary and systemic circulation, or constitutional symptoms.

The coronary arteries' involvement in myxomatous embolization, although rare, has been described to cause acute myocardial infarction (AMI). We report a case of atrial myxoma associated MI and present the clinical and echocardiographic features of this presentation followed by review of the English literature for the association of atrial myxomas and acute myocardial infarctions (AMI).

Keywords: Myocardial infarction, Myxoma

Case report

We present a case of 22 years old Saudi male who came to a peripheral hospital complaining of central chest pain which was not associated with palpitation, nausea or vomiting. He was sweaty on arrival to the ER and was found to have acute inferior myocardial infarction based on clinical presentation, an electrocardiograph (ECG) showing ST elevation in the inferior leads and high cardiac enzymes. He was admitted to the coronary care unit and treated with intravenous thrombolytic as per-protocol with heparin, Aspirin, Plavix and other anti-ischemic medications.

During his stay, a transthoracic echocardiogram showed a 2.5 × 1.8 cm left atrial mass – wide based and attached to the mitral valve and the interatrial septum with inferior wall hypokinesia.

The patient was referred the regional cardiothoracic center for further management. On arrival he was pain free, cardiac examination showed normal S1 and S2, no added sounds. A repeated echo confirmed the presence of the mass and our cardiothoracic team suspected that it might be a myxoma rather than a thrombus.

An ECG showed resolution of the ST elevation in the inferior leads. The coronary angiogram showed normal coronary arteries. His blood investigations on arrival showed: troponin level...
of 9.5, lactate dehydrogenase 1171, creatine kinase
179 CK-MB 4.5.

CBC, RFT and liver enzymes were normal (Except LDH which was high). His lipid profile and
thrombophilia screen were negative.

The patient was referred to the cardiothoracic
surgery where a resection of a large left atrial
myxoma (Fig. 2) was done through biatrial ap-
proach and the defect was closed by bovine patch.

He had uneventful recovery and was discharged
home.

Discussion

Myxomas represent more than two thirds of pri-
mary cardiac tumors, and mostly seen in the left
atrium [1]. They have female preponderance, usu-
ally presenting in the fourth to seventh decades
with most cases being sporadic [2]. Echocardiogra-
phy has sensitivity of 95% for transthoracic echo-
cardiography and 100% for transeosophageal
echocardiography for the diagnosis of myxomas
[1]. Pinede et al. [3] found that 67% of 112 patients
with left atrial myxoma presented with cardiovas-
cular symptoms of heart failure or syncope as a re-
sult of intracardiac obstruction and 29% of them
presented with systemic embolization. The treat-
ment is surgical excision. Sporadic atrial myxomas
rarely recur in less than 3%.

The coronary artery embolization secondary to
myxoma, although rare, has been described well
to cause AMI. Braun [5] reviewed 40 cases of MI
due to left atrial myxoma from 1970–2002. The mean
age in his review was around 50 years. He found
that the right coronary artery was the common cul-
prit with inferior myocardial infarction seen in
most of the cases. In 33% of the documented coro-
nary angiogram it was found to be normal.

The current authors reviewed the English litera-
ture for reported cases of atrial myxoma associ-
ated myocardial infarctions from 2003 to 2013
and found 16 cases. The characteristics of the
cases reported and including our patient are
shown in Table 1.

Despite the greater frequency of myxomas in
women, there is equal female: male ratio in those
presenting with AMI. The patients’ age ranged be-
tween 9 and 64 years with a mean age of 41 years.
The inferior wall has been affected in 53% of the
cases. Ten cases out of 17 (59%) had normal Coro-
nary angiogram. The majority of those with nor-
mal angiogram (70%) were below the age of
45 years.

Lehrman et al. [4] suggested that the coronary
artery embolization is rare in myxoma due to the
right angled junction of the coronary apertures
within the aortic root, the protection of the coro-
naries by the aortic valve cusps and the small
diameter of the apertures.

Normal coronary angiogram has been found in
only 18% of general young AMI patients and only
3% in older patients presenting with MI [6]. The
reason behind having normal coronary angiogram
in patients with atrial myxoma and AMI is still not
clearly known. Soejima [22], Rath [23] and
Hashimoto [24] suggested that it is due to high
rate of spontaneous recanalization after the myxo-
matous embolization from myxoma as a probable
cause.

In summary, myxomas are easily misdiagnosed
and should be considered in young patients with
Table 1. Reported cases of myocardial infarction due to left atrial myxoma in the English Literature in the period 2003–2013.

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Year</th>
<th>1st author</th>
<th>Wall</th>
<th>Site of coronary obstruction</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2012</td>
<td>Gordon Michael Nicholls [7]</td>
<td>Inferior</td>
<td>No obstruction: normal angiogram</td>
<td>44</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td>2010</td>
<td>Konagai N [8]</td>
<td>Infero-posterior wall</td>
<td>Left circumflex coronary artery and the diagonal branch</td>
<td>63</td>
<td>M</td>
</tr>
<tr>
<td>3</td>
<td>2009</td>
<td>Hatemi AC [9]</td>
<td>Inferior</td>
<td>Midegment of the RCA</td>
<td>46</td>
<td>F</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>Ozdögru [10]</td>
<td>Inferior</td>
<td>Neovascularization of the left atrial mass supplied by the left circumflex artery from RCA</td>
<td>38</td>
<td>M</td>
</tr>
<tr>
<td>6</td>
<td>2008</td>
<td>Namazee MH</td>
<td>Inferior</td>
<td>No obstruction: normal angiogram</td>
<td>54</td>
<td>F</td>
</tr>
<tr>
<td>7</td>
<td>2008</td>
<td>Salvatore Patanè [12]</td>
<td>–</td>
<td>LAD. A.</td>
<td>64</td>
<td>F</td>
</tr>
<tr>
<td>8</td>
<td>2008</td>
<td>Goran Milicevic [14]</td>
<td>–</td>
<td>Marginal branch of the circumflex coronary artery</td>
<td>30</td>
<td>–</td>
</tr>
<tr>
<td>9</td>
<td>2006</td>
<td>Sankar NM [15]</td>
<td>Inferior</td>
<td>No obstruction: normal angiogram</td>
<td>35</td>
<td>M</td>
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<tr>
<td>10</td>
<td>2005</td>
<td>Demir M [16]</td>
<td>Inferior</td>
<td>No obstruction: normal angiogram</td>
<td>55</td>
<td>F</td>
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<tr>
<td>12</td>
<td>2005</td>
<td>Yavuz T [18]</td>
<td>Anterior</td>
<td>No obstruction: normal angiogram</td>
<td>38</td>
<td>M</td>
</tr>
<tr>
<td>14</td>
<td>2004</td>
<td>van Gelder HM</td>
<td>Lateral</td>
<td>Circumflex coronary artery</td>
<td>15</td>
<td>M</td>
</tr>
<tr>
<td>15</td>
<td>2004</td>
<td>David Maintz [20]</td>
<td>Interventricular septum</td>
<td>No obstruction: normal angiogram</td>
<td>39</td>
<td>F</td>
</tr>
<tr>
<td>16</td>
<td>2003</td>
<td>Harikrishnan S [21]</td>
<td>Infero-lateral</td>
<td>No obstruction: normal angiogram</td>
<td>9</td>
<td>F</td>
</tr>
<tr>
<td>17</td>
<td>2014</td>
<td>Current case</td>
<td>Inferior</td>
<td>No obstruction: normal angiogram</td>
<td>22</td>
<td>M</td>
</tr>
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</table>

References