trophy cardiomyopathy on chromosomes 11 and 7; the corresponding genes remain unknown[3]. In hypertrophic cardiomyopathy, genotype-phenotype correlation has been investigated for several mutations. Independent studies on the six families with the Arg403Gln mutation in the β-myosin heavy chain have reported a severe clinical phenotype in all of the kindreds, and a variable incidence of sudden death[3]. Recently we have identified the same mutation in an Italian family, in which the Arg403Gln mutation was associated with a severe clinical expression.

Fifteen family members were evaluated by physical examination, 12-lead electrocardiography and two dimensional and Doppler echocardiography[4]. The diagnosis of hypertrophic cardiomyopathy was based on the echocardiographic demonstration of a hypertrophied, non-dilated left ventricle in the absence of other cardiac or systemic disease that could produce comparable left ventricular hypertrophy[5,6]. Ambulatory electrocardiogram monitoring was obtained in five patients, an exercise test in four and cardiac catheterization in two patients with severe heart failure.

High molecular weight DNA was extracted from peripheral blood leukocytes. Primers were designed to amplify exon 13 of the β-myosin heavy chain gene. Polymerase chain reaction was performed in 100 ml reaction volumes containing 50 pmol per primer, standard polymerase chain reaction buffer, 500 ng of genomic DNA and 1 U Taq DNA. The reaction was performed in an automated Thermal Cycler for 30 cycles. An aliquot of the polymerase chain reaction product was digested using Dde I restriction endonuclease. Fragments were resolved in agarose gel electrophoresis after ethidium bromide staining.

Of the 15 family members examined, seven were found to be clinically affected. The proband's father had died suddenly and unexpectedly at the age of 50. In four of the seven patients, hypertrophic cardiomyopathy had been diagnosed in early childhood. In three patients left ventricular hypertrophy was marked and in two of them the left ventricle was obstructed. In the third the hypertrophy was mild or moderate. In all patients the electrocardiogram was abnormal.

In three of the four patients who underwent an exercise test, myocardial ischaemia and/or systemic arterial hypotension were induced at the peak of test. In two other patients severe congestive heart failure was present. One of them, the proband, has recently undergone cardiac transplantation.

The echocardiographic and clinical features of the affected patients are described in Table 1. The Arg403Gln mutation was identified in each of the seven clinically affected individuals and in none of the eight with a normal phenotype. The base substitution creates a cleavage site for enzyme Dde I producing a specific abnormal fragment after Dde I digestion of amplified exon 13.

The clinical characteristics of the Italian family with Arg403Gln mutation confirm that this genetic alteration is associated with severe phenotypic expression of the disease. The emerging relationship between the type of genetic alteration and the clinical course of familial hypertrophic cardiomyopathy points to potentially important new approaches to risk stratification and assessment of prognosis in this disease.

Table 1 Clinical characteristics of the affected family members

<table>
<thead>
<tr>
<th>Age at diagnosis (years)</th>
<th>Sex</th>
<th>Func. class (NYHA)</th>
<th>Basal ECG</th>
<th>MWT (mm)</th>
<th>LVEDd (mm)</th>
<th>LA (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>F</td>
<td>III/IV abnorm</td>
<td>27</td>
<td>marked</td>
<td>41</td>
<td>63</td>
</tr>
<tr>
<td>56</td>
<td>F</td>
<td>III abnorm</td>
<td>22</td>
<td>marked</td>
<td>42</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>II abnorm</td>
<td>27</td>
<td>moderate</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>I abnorm</td>
<td>22</td>
<td>moderate</td>
<td>41</td>
<td>37</td>
</tr>
<tr>
<td>39</td>
<td>M</td>
<td>I abnorm</td>
<td>18</td>
<td>mild</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>I abnorm</td>
<td>15</td>
<td>moderate</td>
<td>37</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>I abnorm</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LA=left atrium; LVEDd=left ventricular end-diastolic diameter; MWT=maximal wall thickness; NYHA=New York Heart Association.

References


Congenital giant left atrial aneurysm in an infant

A 5-month-old female infant was referred to our institution for evaluation of mild respiratory distress and an enlarged cardiac silhouette on chest X-ray. The diagnosis of congenital left atrium aneurysm (LAA) was made by colour Doppler, echocardiography, magnetic resonance imaging (MRI) and cardiac catheterization. The aneurysmal mass was successfully resected. The patient was discharged without medication and continues to do well. According to the literature, there is enough information to diagnose and excise this aneurysm without cardiac catheterization, as it may lead to unnecessary complications.

Congenital LAA was described in 1953 by Fry. There is an earlier report from 1939 by Seams and Taussing but their patient had congenital mitral regurgitation that
dilated the left atrium\(^1\). In adults LAA without other associated abnormalities is a rare condition with less than 40 cases reported\(^2\). As far as we know, only two cases presenting in the first year of life have been reported\(^{2,3}\). Congenital aetiology is supported by young age, lack of associated valvular abnormalities, and absence of histological demonstration of a specific degenerative disease in the atrial wall. The clinical presentation of congenital LAA is supraventricular tachyarrhythmias, systemic embolization or congestive heart failure\(^6\). Congestive heart failure may be related to the space-occupying aneurysmal sac impairing pulmonary venous drainage\(^5\). This pathological process was the cause of dyspnoea in our patient. A chest X-ray may occasionally show an asymptomatic patient to have a deformed left cardiac silhouette, as the result of a prominent left atrial appendage\(^5\). The differential diagnosis includes valvular disease, pericardial cyst, mediastinal mass and LAA\(^5\). Cardiac catheterization and angiography are the diagnostic study of choice for LAA\(^5\). Systemic embolization and atrial tachyarrhythmias might be induced by such an invasive technique. This caused us and others\(^4,6\) to look for more sensitive and specific non-invasive diagnostic systems, such as colour Doppler and MRI.

Our case shows that in infants, as in adults, MRI, together with colour Doppler seems to supply all the information needed to carry out a surgical resection of congenital LAA\(^5\). Due to the risk of life threatening complications, aneurysmal resection is indicated even for asymptomatic patients\(^5\). The prognosis of congenital LAA after surgical treatment is excellent\(^1-5\), no systemic embolization has been reported subsequent to the operation. We conclude that LAA should be considered in the differential diagnoses in infants with mediastinal mass. MRI combined with colour Doppler are sufficient diagnostic tools for pre-surgical elaboration, even in infants with large congenital LAA. Cardiac catheterization in such cases should be omitted as it might lead to life-threatening complications.

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References

A case of infective endocarditis complicated with anterior mitral valve leaflet abscess

Infective endocarditis is a microbial infection of intact or degenerated cardiac valves, the endothelium surrounding congenital or acquired cardiac defects and the endothelium of vascular malformations\(^1\). Although there are many complications of the disease, to our knowledge there are few reported cases complicated by an abscess of the cardiac valve leaflet\(^1\).

We report a case of infective endocarditis very probably complicated by an abscess of the anterior mitral valve leaflet in addition to embolic complications.

A 19-year-old white male presented to the emergency room semiconscious with fever, abdominal pain, weight loss, motor aphasia and a possible diagnosis of infective endocarditis. His physical examination revealed a body temperature of 38.8\(^\circ\)C, an apical third heart sound, a grade 2/6 pansystolic murmur on the apex, a right hemiparesis, cutaneous embolic phenomena and a sacral grade 2 decubitus ulcer.

Circulating blood cells showed a haemoglobin of 9 g.dl\(^{-1}\), and a haematocrit of 28%. His white blood cells were 12 200 mm\(^{-3}\) with a left shift on the differential count. Erythrocyte sedimentation rate was 75 mm.h\(^{-1}\). His ECG and chest X-ray were normal. A head computed tomography scan showed multiple infarctions. Blood cultures were drawn. His echocardiogram revealed a 1.3 x 0.7 cm mobile vegetation and a prolapse of the anterior mitral valve leaflet into the left atrium. Abdominal ultrasound showed a 12 x 7 cm splenic abscess which was drained and cultured. Three of four blood cultures grew methicillin resistant \textit{Staphylococcus aureus} (MRSA) as did the splenic drainage specimen. On the 12th day of admission, there was no cessation of fever. A Doppler echocardiogram revealed a lesion compatible with an abscess on the anterior mitral valve leaflet (Fig. 1): grade 2/3 mitral insufficiency, and grade 1/4 tricuspid insufficiency. Surgery was ruled out because of the patient’s poor clinical condition. Three weeks after admission his fever ceased and on the 42nd day of admission the patient left hospital, against medical advice. He was put on oral ciprofloxacin 500 mg four times a day and rifampicin 600 mg daily and was requested to

Eur Heart J, Vol. 18, June 1997