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Echocardiographic features of mitral valve prolapse in Libyan patients

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Summary

Echocardiographic observations in 200 subjects with mitral valve prolapse (MVP) are presented. The diagnostic criteria used were: (1) abrupt late systolic posterior motion of one or both leaflets of the mitral valve, and (2) holo- or pansystolic posterior motion of 3 mm of one or both leaflets of the mitral valve. Most of the subjects were young — 72% were aged less than 30 years. Prolapse of posterior leaflets was noted in 98% of subjects — 69.5% late systolic, 28.5% pansystolic, and 2% had prolapse of the anterior mitral leaflet only. Mitral valve prolapse was considered to be primary — being the only abnormality in 78.5% of the subjects. In the remaining 21.5% MVP was associated with other cardiac lesions, the commonest being, atrial septal defect (2.5%), dilated aortic root (2%), bicuspid aortic valve (2%), cardiomyopathy (5%), rheumatic heart disease (4%) and ischaemic heart disease (1.5%). Mitral valve prolapse was considered to be important enough to result in haemodynamically significant mitral regurgitation in only 8% of subjects. Mitral valve prolapse was the commonest single echocardiographic abnormality (16%) observed in patients referred to this university hospital, which is the referral centre for approximately half of Libya. Although this does not indicate the prevalence of MVP in the general population, this study indicates MVP to be the commonest valvular abnormality seen in hospital practice in Libya.

Résumé

Des observations échocardiographiques chez 200 patients souffrant de la prolapse des valvules mitrales sont présentées. Les critères diagnostiques utilisés ont été: (1) une brusque retardation de la motion systolique en arrière de l'un ou des deux feuillets de la valvule mitrale, et (2) une motion en arrière de nature holo ou pansystolique de plus de 3 mm de l'un ou des deux feuillets de la valvule mitrale. La plupart des malades étaient jeunes avec 72% moins de trente ans. La prolapse des feuillets postérieurs a été notée chez 98% des malades, 69.5% cas de systolie retardée, 28.5% de pansystolie tandis qu'il n'y a eu que 2% de cas de prolapse du feuillet mitral antérieur. La prolapse valvulaire était considérée primaire étant donné qu'elle a été anomalie chez 78.5% des malades. Chez 21.5% des malades la prolapse valvulaire mitrale a été associée à d'autres lésions cardiaque telles que: anomalie du septum atrial (2.5%), dilatation de la racine de l'aorte (2%), valvule aortique bicuspide (2%), la cardio-myopathie (5%), le rhumatisme cardiaque (4%) et maladie ischémique du coeur (1.5%). La prolapse valvulaire a été considérée assez importante pour engendrer une régurgitation mitrale qui était hémodynamiquemment significative chez 8% des malades. La prolapse valvulaire a été la plus commune anomalie échocardiographique (16%) observée dans le centre hospitalier universitaire servant la moitié de la Libye. Bien que cette figure ne represente pas la prévalence de la prolapse valvulaire dans la population cependant cette étude montre que la prolapse valvulaire est la plus commune anomalie de la valvule rencontrée en practique hospitalier en Libye.

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Introduction

Mitral valve prolapse (MVP), is perhaps the commonest valvular lesion encountered in car-

diology practice, and it is certainly the commonest cause of mild mitral regurgitation in the western world. Its prevalence in the general population has been reported to vary between 6% and 17% in various studies [1–3]. The auscultatory signs of non-ejection systolic click and apical late systolic murmur, are the hallmark of diagnosis of this lesion. However, echocardiography has proved to be of greater value in the detection, as well as in the confirmation of the diagnosis of mitral valve prolapse. In spite of the several advances in echocardiographic techniques, M-mode echocardiography, even today, is a simple and reliable method to confirm diagnoses [4]. In this paper we describe echocardiographic features of mitral valve prolapse in 200 subjects, as seen in one of the university medical centres in Libya.

Subjects and methods

This study was carried out at the Seventh-April Hospital, the main teaching hospital of the Arab Medical University, Benghazi, Libya. Over a period of 15 months, 1188 patients were referred to the echocardiographic laboratory of this hospital. Echocardiograms were recorded by the M-mode technique using an Ekoline M-III strip chart recorder. Diagnosis of mitral valve prolapse was made in 200 patients using the criteria found to be most reliable by Haikal *et al.* [4]:

(1) abrupt late systolic posterior motion of one or both leaflets of the mitral valve (Fig. 1), and

(2) holosystolic or pansystolic posterior motion of one or both leaflets, starting from the 'C' point, of >3 mm (Fig. 2).

Any other echocardiographic abnormalities were noted, and diagnosis of associated cardiac lesions was based on both clinical and echocardiographic features.

Results

The age and sex distribution of these 200 subjects is shown in Table 1. The commonest age group was between 10 years and 19 years and 72% of the subjects were below 30 years of age, and there was an equal sex distribution.

Table 2 shows that 98% of the subjects had prolapse of the posterior leaflets, 69.5% had abrupt posterior motion in late systole, and 28.5% had a pansystolic or 'hammocking' downward motion of the posterior leaflet. Three subjects had prolapse of both anterior

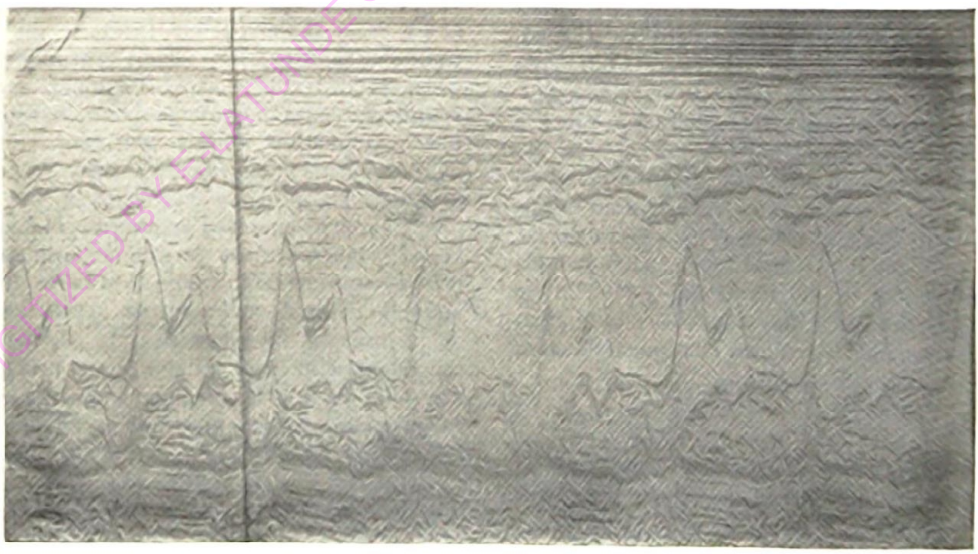

Fig. 1. Abrupt late systolic posterior motion of posterior leaflet of mitral valve.

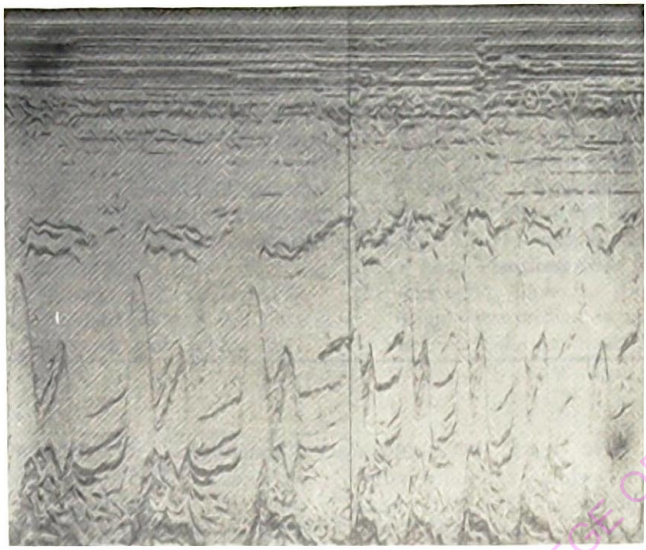

Fig. 2. Pansystolic posterior motion of posterior leaflet of mitral valve.

Table 1. Age and sex distribution

Age	Male	Female	Total
0–9	5	13	18
10–19	35	36	71
20–29	33	22	55
30–39	15	13	28
40–49	2	8	10
50–59	6	7	13
>60	4	1	5
Total	100	100	200

Table 2. Type of mitral valve prolapse

	No. of subjects
Posterior leaflet	
Pansystolic	57
Late systolic	139
Anterior leaflet	4
Both leaflets	3

and posterior leaflets and four other subjects had prolapse of the anterior leaflet only.

Seventy-six per cent of subjects had MVP of no haemodynamic significance, i.e. without enlargement of any of the cardiac chambers (Table 3). In only 8% of the subjects was there any left atrial and/or left ventricular enlargement caused by MVP; in another 16%, chamber enlargements were considered to be due to other associated cardiac lesions.

Table 4 indicates the various associated cardiac lesions detected in these subjects — atrial septal defect, dilated aortic root, and

Table 3. Chamber enlargement in MVP

	No. of subjects
MVP without any chamber enlargement	152
MVP with chamber enlargement due to MVP itself	16
MVP with chamber enlargement due to other associated lesions	32
Total	200

Table 4. Number of subjects with associated cardiac lesions

Congenital lesions	Number	Acquired lesions	Number
Atrial septal defect	5	Congestive cardiomyopathy	8
Dilated aortic root	4	Hypertrophic cardiomyopathy	2
Bicuspid aortic valve	4	Ischaemic heart disease	3
Ventricular septal defect	2	Rheumatic heart disease	8
Pulmonary stenosis	2	Hypertension	2
Tricuspid valve prolapse	2		
PDA	1		
Total	20		23

bicuspid aortic valve were the common congenital lesions, while cardiomyopathy, ischaemic heart disease and rheumatic heart disease were the common acquired cardiac lesions.

Discussion

Although no particular racial or geographic pattern of prevalence of MVP has been reported, there is no data available indicating the magnitude of this problem in the Arabic population. Over a period of 15 months 1188 patients were referred for echocardiographic examination to this university hospital. Mitral valve prolapse was the commonest single abnormality noted, being present in 200 patients. Although the exact prevalence of MVP can only be established by population survey, this study certainly indicates MVP to be the commonest cardiac valvular lesion seen in this part of Libya.

There are several criteria for echocardiographic diagnosis of MVP, but the two criteria used by us have been found to be the most reliable, with a high sensitivity and specificity [4]. Other echocardiographic abnormalities, like systolic echoes in the left atrium [5], unique systolic anterior motion of the anterior mitral leaflet [5], multiple systolic mitral echoes [5], and shaggy or multiple linear diastolic echoes posterior to the mitral valve [6], have been found to be more specific but not sufficiently sensitive [4], hence they were not used by us as essential criteria for diagnosis.

The observed pattern of associated cardiac lesions was similar to that reported by several other authors [7–10]. Associated cardiac lesions were seen in 21.5% of our subjects. Common congenital lesions found in our study were: atrial septal defect (2.5%), dilated aortic root (2%), and bicuspid aortic valve (2%); atrial septal defect has also been reported as the commonest associated congenital cardiac lesion in another paper [7]. The most common acquired cardiac lesions seen by us were: cardiomyopathy (5%), rheumatic heart disease (4%) and ischaemic heart disease (1.5%). As in a previous report [7], our study indicates that in the vast majority (78.5%) of subjects, MVP was primary — this lesion being the only abnormality in these subjects. Again this may not truly reflect the actual prevalence of primary MVP, as not all cardiac patients are referred for echocardiographic assessment.

Nearly all of the subjects seen by us (98%) had prolapse of the mitral valve, and the anterior leaflet was involved in 3.5% of subjects. Of these, isolated anterior leaflet involvement was seen in only 2% of subjects. In most of our subjects MVP was haemodynamically insignificant, and did not result in any chamber enlargement. In only 8% of the subjects did MVP cause significant enough mitral regurgitation to initiate left atrial and/or left ventricular enlargement. This confirms the general impression of good long-term prognosis in most subjects.

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