Reliability and clinical relevance of detection of vegetations by echocardiography in bacterial endocarditis

Sir,
The recent paper by Hickey *et al.* (*Br Heart J* 1981; 46: 624-8) provides an interesting indication of the potential use of M-mode echocardiography in patients with infective endocarditis.

In view of their findings, the criteria for differentiating the echocardiographic appearances of vegetations from those of the underlying valve disease are clearly important. For instance, chordal rupture associated with mitral valve prolapse can result in echocardiographic patterns which resemble those produced by "shaggy non-uniform masses". By contrast, the presence of heavy calcification of valve cusps often prevents recognition of more subtle associated structural abnormalities. In the presence of heavy calcification or rheumatic disease causing restriction of leaflet motion were the authors able to detect vegetations around the valves themselves, or were the vegetations only detectable in the left atrium or left ventricular outflow tract?

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This letter was shown to Drs Hickey, Wolfers, and Wilcken who reply as follows.

Sir,
We thank Dr Mills for his comments about our paper and for drawing attention to the two important groups of patients in whom the diagnosis of vegetations by echocardiography may prove difficult—those with thickened or calcified valves and those with mitral valve prolapse and chordal rupture.

In relation to the first problem, we have made a definite diagnosis of vegetations in thickened or calcified valves when vegetations were identified in the left atrium or left ventricular outflow tract (as Dr Mills mentions), when vegetations were detected in a

valve other than one thickened, that is vegetations on a normal mitral valve with a thickened and presumably affected aortic valve, or when sequential echocardiograms obtained over several weeks revealed progressive changes. We stress the importance of sequential echocardiograms. Thus, in our study there were seven patients with thickened aortic valves and one with mitral stenosis in whom vegetations were considered to be present. Of the patients with aortic valve disease, two had vegetations visible in the ventricular outflow tract, as shown in Fig. 1 of our paper, and three had progressive changes in and around the aortic valve leaflets over periods ranging from six to eight weeks; the remaining two patients with thickened aortic valves had vegetations on their mitral valves and there was confirmation of bivalvular involvement in one (necropsy was refused in the other). In the one patient with mitral stenosis, shaggy echoes were noted both in systole and diastole around the thickened mitral leaflets. A diagnosis of probable vegetations only was made in this case, with subsequent confirmation at surgery.

We certainly agree with Dr Mills that there is a risk of making a false positive diagnosis of vegetations in patients with chordal rupture complicating mitral valve prolapse. There were six patients in our study with clearly defined mitral valve prolapse at echocardiography. Only one of these was considered to have vegetations (Fig. 2 of our paper) and these were found at surgery. None had evidence of chordal rupture. Since the completion of our study, however, we have had a patient with *Streptococcus viridans* endocarditis on a floppy mitral valve with chordal rupture. We did not consider this patient had vegetations on the M-mode study using our criteria, but we made a confident diagnosis of vegetations on the basis of a two dimensional study which appeared to show a large vegetation attached to the tip of the anterior leaflet. At surgery after six weeks of chemotherapy there was microscopical evidence of infection in the excised

valve, ruptured chordae to the anterior leaflet, but no detectable vegetations. After viewing the specimen we did not see how one could have differentiated the mass we detected, which was the flail myxomatous tip of the anterior leaflet, from vegetations. Perhaps, however, the distinction is not crucial to the management in a patient with suspected or proven infective endocarditis receiving appropriate antibiotic treat-

ment since early surgery is usually indicated for chordal rupture anyway.

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