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4/8/53870

CLINICALLY SILENT PATENT DUCTUS ARTERIOSUS

To the Editor:

We read with interest the report by Balzer et al.[1] of a case of infective endarteritis in a patient with a clinically silent patent ductus arteriosus. Balzer et al. are to be commended for their prompt diagnosis and effective treatment of this unique case. However, their suggestion that all patients with a silent patent ductus arteriosus require the same treatment (i.e., antibiotic prophylaxis and surgical closure) as patients with the typical continuous murmur deserves more careful scrutiny. Although it obviously would have been better for the patient if his episode of infective endarteritis had been prevented by elective surgical closure of his silent patent ductus arteriosus, our first question must be, how many such operations would have been necessary to prevent this isolated instance of endarteritis? In a study of over 4000 children without pathologic heart murmurs, Houston et al.,[2] estimated the prevalence of silent patent ductus arteriosus to be 0.5% (unpublished data from our center suggest that clinically silent patent ductus arteriosus is observed in approximately 1% of children undergoing echocardiography for Kawasaki disease.) Applying the prevalence data of Houston et al. to the roughly 60 million children and adolescents in the United States (neglecting the possibility that the condition persists into adulthood) yields an estimate of 300,000 youngsters who would need to have been operated on to prevent the single illness reported.[1] Even if the mortality risk from these operations were as low as 1 in 20,000, 15 children would have died to prevent a single case of infective endarteritis.

Our second question is how these 300,000 potential patients are to be identified. Because this condition is clinically silent by definition, we must assume that every child and adolescent needs to be screened by color flow Doppler echocardiography. Of the 60 million people to be screened, millions (primarily infants and toddlers) will be uncooperative and require sedation; millions more (primarily adolescents) will have inadequate precordial imaging and require transesophageal echocardiography. Although echocardiography with sedation and transesophageal echocardiography are safe procedures, any drug or invasive procedure applied to millions of patients is likely to result in a number of adverse events. A similar argument can be made against administration of millions of doses of prophylactic antibiotics to prevent one case of endarteritis. Balzer et al.[1] point out that infective endarteritis on a clinically silent patent ductus arteriosus may have occurred in other patients (besides their single case) who have been incorrectly diagnosed as endocarditis with a normal heart. However, considering that color flow Doppler echocardiography has been widely available for nearly a decade, we doubt that many such errors have been made in recent years. Although the exact incidence of infective endarteritis with silent patent ductus arteriosus may never be known, the risk is certainly smaller than that of patients with the typical continuous murmur: Before the introduction of antibiotic prophylaxis, the risk of endarteritis in patients with a clinically apparent patent ductus arteriosus was estimated to be 0.45%/year.[3] If this risk applies to the estimated 300,000 U.S. children and adolescents with a silent patent ductus arteriosus, >1300 cases of infective endarteritis would be expected each year, and every small pediatric cardiac center (pediatric population base approximately 200,000) would expect four or five cases per year. This is clearly not occurring, and we believe that the risk of infective endarteritis on the silent patent ductus arteriosus must be more than a thousandfold less than the risk when a continuous murmur is present.

Medical practice recommendations should also include cost-effectiveness considerations. Provision of color flow Doppler echocardiographic examinations to 60 million American children and surgical ductus ligations in 300,000 of them is a costly proposition: At $500 per echocardiogram and $10,000 for surgery, costs would total $33 billion. As for effectiveness, to prevent 1, 10, or any believable number of cases of infective endarteritis on clinically silent patent ductus arteriosus, nearly 300,000 children would be subjected to unnecessary lateral thoracotomy, requiring >3000 patient-years of hospitalization. As discussed earlier, these operations would result in a small (but not negligible) number of deaths and other morbid events. From both the clinical and cost-effectiveness standpoints, elective surgical closure of the clinically silent patent ductus arteriosus appears to be counterproductive. Although we agree wholeheartedly with the decision by Balzer et al.[1] to surgically close their patient's ductus arteriosus, we must caution against the suggestion that all patients with a clinically silent patent ductus arteriosus receive routine antibiotic prophylaxis and surgical ligation. The bulk of clinical evidence continues to support the conclusion of Latson[4] that the clinically silent patent ductus arteriosus is best considered a "benign techno-malady."

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4/8/53862

REPLY

To the Editor:

We thank Drs. Lloyd and Beekman for their thoughtful comments regarding our case report. We certainly appreciate the clinical and economic ramifications of screening for antibiotic prophylaxis and surgical ligation of all clinically silent patent ductus arteriosi. It was not our intention to suggest that this should be done. Our intention was to report a previously unrecognized association that does exist and to make physicians recognize that endarteritis should be considered in the differential diagnoses of otherwise unexplainable bacteremia, especially in older patients