Editorial

Uncertainties about interpretation of ventricular stimulation studies in patients with Wolff-Parkinson-White syndrome

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Arrhythmia is common and important in the Wolff-Parkinson-White syndrome, and indeed many would agree that both pre-excitation and supraventricular arrhythmia are essential features of the classical expression of this syndrome. Reentrant atrioventricular tachycardia is the most commonly encountered arrhythmia in the syndrome, but atrial fibrillation and to a lesser extent flutter are seen in 10–32% of patients.¹ Independent, coincidental arrhythmias, such as intranodal reciprocating tachycardia, are unusual.² There is of course the fear of ventricular fibrillation^{3,4}; and a small risk of sudden death has been reported.^{3–5}

In this issue of the *British Heart Journal* (p. 89), Brembilla-Perrot and her colleagues examine the occurrence of ventricular tachycardia in the Wolff-Parkinson-White syndrome. They compared the electrophysiological findings in 46 patients with pre-excitation with those in 36 controls in whom there was no evidence of pre-excitation. Programmed stimulation induced ventricular tachycardia in 37% of patients with pre-excitation and in 3% of the controls. The problem in the Wolff-Parkinson-White syndrome is not, however, ventricular tachycardia but rather ventricular fibrillation.

Clinically significant spontaneous ventricular tachycardia is rare in the pre-excitation syndrome: only one case was noted in each of two series of 139 and 163 patients^{6,7}; and another review of reported cases of pre-excitation also found that this arrhythmia was uncommon.⁸ When spontaneous ventricular tachycardia occurs it seems to be associated with underlying heart disease.⁹ Furthermore, when

ventricular fibrillation complicates the Wolff-Parkinson-White syndrome it is usually preceded by atrial fibrillation and not by ventricular tachycardia. Non-sustained multiform ventricular tachycardia is often observed at electrophysiological study and may be induced in normal individuals if the stimulation protocol is sufficiently aggressive.¹⁰ With the protocol used in the current study, and in that of Milstein *et al*,¹¹ however, the expected frequency of induced ventricular tachycardia would be low, perhaps 0.7%¹² or 3%.¹³

Nevertheless, there are now two studies, the present one and that of Milstein *et al*,¹¹ which show that inducible ventricular tachycardia is more common in patients with the Wolff-Parkinson-White syndrome than in control groups. The question whether this feature is a further non-specific, but sensitive, indicator of the risk of ventricular fibrillation will only be resolved by long term follow up and knowledge of other possible risk factors, such as a history of both reciprocating tachycardia and atrial fibrillation with short maximally pre-excited RR intervals.⁴ On its own, however, the importance of inducible ventricular tachycardia is doubtful because the frequency of sudden death in the pre-excitation syndrome is not even remotely near 37%: in clinical experience it is rare, and it was not encountered in one review.¹⁴

How do these findings affect the management of patients with the Wolff-Parkinson-White syndrome? The answer is hardly at all. From a clinical standpoint, decisions will continue to be based either on symptoms or on the presumed risk of ventricular fibrillation as assessed by the anterograde conduction properties of the accessory pathway.¹⁵ From the epidemiological point of view, as various forms of treatment, including surgical ablation of

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the accessory pathway, reduce the number of patients with the Wolff-Parkinson-White syndrome considered to be at high risk, it will become impossible to evaluate any dangers of susceptibility to inducible ventricular tachycardia and its relation to other high risk factors for sudden death. This may be for the best as, whatever the shortcomings of assessing risk from the conduction properties of the accessory pathway, there will be endless problems, both medical and socioeconomic, if too much weight is placed on non-specific ventricular responses to programmed stimulation. Indeed, in a recently published consensus statement there was no agreement about the value of programmed stimulation in the identification of ventricular tachycardia (save in specific circumstances), and in the Wolff-Parkinson-White syndrome it was proposed that very rigid criteria, including drug-refractory arrhythmia, must be fulfilled before routine study is warranted.¹⁶ Longevity in the Wolff-Parkinson-White syndrome is by no means rare¹⁷ and one should be very careful before deducing high risk from the results of invasive studies, in the face of clinical experience.

This having been said, the results presented by Brembilla-Perrot and her colleagues will be studied with interest and taken into account by those performing electrophysiological studies in patients with the Wolff-Parkinson-White syndrome. It should not take long to assess whether ventricular stimulation of this sort is relevant to the Wolff-Parkinson-White syndrome; this will give us more confidence in the management of our patients with this syndrome. If the clinical relevance of what Brembilla-Perrot *et al* say turns out to be highly limited, it will provide further reassurance about the management of the vast majority of patients with this disorder.

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