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THE CONGENITAL ORIGIN OF PARASYSTOLIC CARDIAC ARRHYTHMIAS

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We were impressed by the high rate occurrence of cardiac arrhythmias with ectopic mechanism found during routine electrocardiogram recordings, in young and healthy patients, with normal heart.

In this paper our intention is to present a peculiar explanation for the origin of the parasystolic type of arrhythmias in healthy patients.

Material

In 12 patients aged 18—38 years left atrial tachycardia, and in 4 patients right atrial ectopic tachycardia was found. There were 9 females

and 7 males without special complaints and able to perform a normal activity; among them a football player and two well trained athletes are worthy to be mentioned. The parasystolic type of tachycardia was established using intracardiac and oesophageal leads. Among the tachycardia episodes, atrial parasystolic beats with the same shape as those from tachycardia were found. In two patients short episodes of sinus arrest at the end of tachycardia, with lightheadness and even syncopes were observed, and in one patient short episodes of atrial fibrillation (4).

In 17 patients, 10 males and 7 females, between 13 and 14 years old, episodes of ventricular tachycardia of parasystolic type, with parasystolic beats among the tachycardia episodes were found. The oesophageal recordings were able to point out ventricular origin of tachycardia and to better appreciate the atrial activity. All the patients were without special complaints, one football player, one rower and three hard trained athletes. In two instances the ventricular tachycardia occurred in the same family, two brothers, and mother and son (5).

In 24 patients anly atrial parasystolic beats, and in 63 only ventricular parasystolic beats were found, all being young, with good physical fitness and clinically normal heart.

Discussion and conclusions

The parasystolic arrhythmia is not commonly recognized and may be observed in healthy young patients, being associated with favourable prognosis and generally does not require specific therapy. The criteria for a parasystolic focus are: variable coupling intervals, constant shortest interectopic interval and fusion beats (1, 2, 3).

A parasystolic focus may initiate the paroxysm of atrial or ventricular tachycardia. This would imply the presense of an exit block which is nomally operative and which tends to prevent the escape of impulses from the parasystolic pacemaker. When the block diminishes or disappears, it allows all the ectopic impulses to give rise to premature beats, resulting in a paroxysmal tachycardia (1, 2, 3, 6).

The foetal structures of AV node and His bundle are less sharply circumscribed or delineated and have many irregular edges. The postnatal morphogenesis includes a resorptive degeneration of these irregular edges. Unfortunatlev this orderly normal process does not always proceed properlq, and in some adult heart there are residual irregularities, as persistent foetal dispersion, which serve as abnormal foci of automaticity (6, 7).

The presence of persistent foetal dispersion of nodal and His bundle fragments within the central fibrous body, septum and even in atrial working myocardium, may explain the otherwise healthy heart and the possibility to perform strenuous physical activity.

The congenital origin of the parasystolic arrhythmias in these patients may be a very attractive explanation. The persistent foetal dispersion of specific myocardial tissue fragments within the atria, the central fibrous body and interventricular septum, as postulated by T. *James*, may be a valuable explanation in our cases (3, 5). These nests of specific myocardial cells are ideally located to serve as abnormal foci of automaticity, giving origin to parasystolic rhythm (7).

References

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