Relation of Supraventricular Paroxysmal Tachycardia to Heart Disease and the Basal Metabolism Rate

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The records of 9,950 private patients were reviewed to determine the incidence of supraventricular paroxysmal tachycardia. The relationship of the tachycardia to the various types of heart disease was determined. The incidence of tachycardia in normal persons and in patients with hyperthyroidism or hypothyroidism was also studied.

SUPRAVENTRICULAR paroxysmal tachycardia has been described as occurring frequently in association with thyrotoxicosis and also with rheumatic heart disease; however, White\(^1\) reported that 89 among a total of 132 collected cases occurred in persons who showed no evidence of heart disease. Fatigue was given so frequently as the responsible factor in precipitating the attack that it was suggested that a hypothyroid state should be studied for demonstration of any possible relationship between it and the tachycardia. In order to evaluate these impressions the following investigation was undertaken, using various types of standard commercial basal metabolism apparatus, under carefully controlled basal conditions.

METHOD AND RESULTS

A review of the records of 9,950 private patients from a cardiologic service revealed 361 cases of supraventricular paroxysmal tachycardia, or an incidence of 3.6 per cent. The cases of tachycardia were distributed as follows: 122, or 34 per cent, occurred in persons considered to be normal; 123, or 34 per cent, in patients with rheumatic heart disease; 51, or 14 per cent, in patients with arteriosclerotic heart disease; 12, or 3 per cent, in patients with hypertensive heart disease; 16, or 5 per cent, in patients with thyrocardiac disease; all the remaining cases (10 per cent) occurred in association with various other conditions. In order to compare this distribution and to determine whether or not these percentages differed from the natural grouping of cardiological patients, a sample of 5,530 patients with supraventricular paroxysmal tachycardia was analyzed which showed the following incidence: 1,188, or 21 per cent were normal; 1,098, or 31 per cent had arteriosclerotic heart disease; 935, or 17 per cent, had hypertensive heart disease; 915, or 16 per cent, had rheumatic heart disease; 199, or 4 per cent, had thyrocardiac disease; the remaining patients (11 per cent) had other varied cardiac conditions.

Of our 361 patients with supraventricular paroxysmal tachycardia there were 206 in whom the basal metabolic rate had been determined. Since the largest percentage of cases of supraventricular paroxysmal tachycardia occurred in normal persons and in those with rheumatic heart disease, these two groups were studied in regard to the basal metabolic rate. There were 97 persons in the normal group upon whom determinations of the basal metabolic rate had been made. In 4 of these, or 4 per cent, the rate was above +20; in 80, or 86 per cent, it was between +20 and −20; and in 10, or 10 per cent, it was below −20 per cent. There were 51 patients in the rheumatic heart disease group upon whom the determinations were made. In 2 of these, or 4 per cent, the rate was above +20; in 43, or 84 per cent, it was between +20 and −20; and in 6, or 12 per cent, it was below −20 per cent. Of all the subjects upon whom basal
metabolism determinations were made, in 17, or 8 per cent, the rate was above +20; in 168, or 82 per cent, it was between +20 and -20; and in 21, or 10 per cent, it was below -20 per cent. It appeared from these studies that hyperthyroidism or hypothyroidism has no effect upon the occurrence of supraventricular paroxysmal tachycardia and that most attacks of this type of tachycardia occur in patients with rheumatic heart disease.

The high percentage of paroxysmal tachycardia found in the normal group is explained by the fact that these persons frequently presented themselves for examination because of the attacks of rapid heart action. In the sample group which revealed the ratio of various types of heart disease the incidence of normal persons was 25 per cent higher than that in the group with rheumatic heart disease. When this was considered it was realized that the occurrence of supraventricular paroxysmal tachycardia in association with rheumatic heart disease should be increased and that in the normal group it should be decreased from 34 per cent. The reverse was found in the group with arteriosclerotic heart disease, in which the incidence was 31 per cent, but only 14 per cent of these patients had supraventricular paroxysmal tachycardia. There appeared to be no definite relationship in occurrence between supraventricular paroxysmal tachycardia and either hypertensive or arteriosclerotic heart disease.

**Conclusions**

A review of 9,950 cases from a cardiology service revealed an incidence of 3.6 per cent of supraventricular paroxysmal tachycardia. The highest incidence (34 per cent) of supraventricular paroxysmal tachycardia was found in the patients with rheumatic heart disease and the next highest in those with normal hearts.

There was no relation found between supraventricular paroxysmal tachycardia and the other types of heart disease.

Hyperthyroidism or hypothyroidism had no effect upon the incidence of supraventricular paroxysmal tachycardia.

**Reference**

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