Significance of Measurement of Antihyaluronidase Activity in Rheumatic Fever

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SINCE some strains of β-hemolytic Streptococcus of Group A produce little or no Streptolysin O, a rise of ASO is not invariably seen in infections by β-hemolytic Streptococcus of Group A. In the revised Jones' criteria, recent history of scarlet fever and the rise of titers of serum reaction due to hemolytic streptococcus such as ASO, AH (antihyaluronidase) and ASK are considered to be indispensable for the diagnosis of infection by hemolytic streptococcus. We have measured ASO and AH titers in rheumatic fever and rheumatic heart disease with follow-up of the changes in some cases.

MATERIALS AND METHODS

Thirty-nine patients who consulted the Department of Pediatrics, University of Tokyo and Department of Pediatrics, Kyorin University between 1968 and 1975 were selected for the study, 26 with rheumatic fever, and 13 with inactive rheumatic heart disease. ASO titer was measured by Ranz-Randall method and AH by the use of Difco Kit.

RESULTS

Patients with rise of both ASO and AH were classified as Group 1 (ASO↑ AH↑), those with a rise of ASO and unchanged AH (ASO↑ AH→) as Group 2, those with unchanged ASO and a rise of AH (ASO→ AH↑) as Group 3 and those with unchanged ASO and AH (ASO→ AH→) as Group 4, as in Table 1. Rheumatic heart disease was defined as the heart disease of rheumatic nature without an activity of rheumatic fever.

Rheumatic fever without carditis was seen in 12 cases (80%) of Group 1, 2 cases (13.8%) of Group 2, 1 case (6.2%) of Group 3 and none in Group 4, total of 15 cases. Rheumatic fever with carditis was seen in 8 cases (92.7%) of Group 1, 3 cases (27.3%) of Group 3 and none in Groups 2 and 4. Rheumatic heart disease was seen in 1 case (7.7%) of Group 2, 2 cases (15.4%) of Group 3, 10 cases (72.9%) of Group 4 and none in Group 1. It should be noted that AH was high without a concomitant rise of ASO in 4 (15.4%) of 26 cases of active rheumatic fever.

Fig. 1–4 summarize cases in which it was pos-

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<th>TABLE I RELATION BETWEEN ASO AND ASK IN RHEUMATIC FEVER</th>
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Fig. 1.

Fig. 2.

Fig. 3.

sible to follow-up the changes of titers of each serological reaction. ASO normalized in about 2 months, but AH appeared to require 4–5 months or more to recover to normal. In case 4 (Fig. 4), a 13 year old girl, arrhythmia was pointed out about 3 months after a febrile episode. Rheumatic heart disease was suspected and patient was referred to this hospital. No murmurs were heart and EKG revealed only IRBBB pattern and sinus arrhythmia. AH titer was as high as 1024X but ASO stayed within normal limits at 64X.

CONCLUSION

In recent years, rheumatic fever seems to have decreased but rheumatic heart disease with latent onset appears to persist in similar frequency. Measurement of AH along with ASO is required in rheumatic heart disease with latent onset, for more definite diagnosis, therapy and suggestion for the mode of living.

For the diagnosis of rheumatic fever in acute stage, serological reactions for hemolytic streptococcus other than ASO should be done along with ASO. In our cases, ASO titer was high in 84.5% of cases, but either ASO or AH titer was elevated indicating positive reaction for hemolytic streptococcus in 100% of cases.