Effect of Steroid Hormone on Rheumatic Carditis

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Summary

One hundred and eleven patients with rheumatic carditis of the first attack were treated with steroid hormone. In the cases, in which the steroid hormone therapy started within 2 weeks from the onset of the disease, all except one did not reveal a residual valvular heart disease after 2 years from the treatment.

It was suggested that early diagnosis and the earliest start of steroid hormone therapy with large dose on rheumatic carditis is necessary for the prevention against development of rheumatic heart disease.

A therapeutic schedule for rheumatic fever is recommended.

Additional Indexing Words:

Rheumatic fever Steroid hormone therapy Therapeutic schedule Disappearance of cardiac murmur

MANY reports have been published concerning the therapeutic effect of steroid hormone on rheumatic carditis so far. Some authors recognized no difference between the therapeutic effect of steroid hormone and salicylate on the rheumatic carditis which was followed up more than a year.^{1),2)} These results, however, should not be argued without the consideration on the dose and the administration schedule of the drugs and the interval between the onset of the disease and the start of the therapy.^{3),4)} The authors' results are considered to show a favorable effect of steroid hormone on rheumatic carditis.

MATERIAL AND METHODS

One hundred and eleven patients with rheumatic carditis of the first attack were treated with steroid hormone. These cases had an apical systolic murmur more than grade 3 or apical systolic murmur more than grade 2 with apical middiastolic murmur. All cases satisfied the revised Jones diagnostic criteria for rheumatic fever. All cases were followed up more than 2 years.

These cases were divided into 3 groups by the interval from the onset of the

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disease to the start of steroid hormone therapy; the first group within 2 weeks, the second group between 2 and 6 weeks, and the third group more than 6 weeks.

The dose of steroid hormone preparation was divided into 3 groups by the starting dose; large dose 40 mg or more a day as prednisolone, moderate dose between 20 and 39 mg of prednisolone a day, and small dose less than 20 mg of prednisolone a day.

The therapeutic schedule for rheumatic fever by the study group of the Ministry of Health and Welfare, Japan is shown in Table I.

RESULTS

I. Appearance of cardiac murmur during the steroid hormone therapy

Appearance of cardiac murmur during the administration of steroids in rheumatic patients was as in Table II. In none of the cases, which were treated by a large dose of steroid hormone preparation, cardiac murmur developed during nor after the administration of the drugs, but in the group, in which moderate or small dose of steroid or aspirin was administered, cardiac murmur appeared in some cases.

•	-											
Group	weeks											
	lst	2	3	4	5	6	7	8	9	10	11	12
Cases with carditis within 6 weeks from the onset of the disease	40	35	30	25	20	15	10	7.5	5	2.5 mg		
over 6 weeks from the onset of the disease	60	55	50	45	40	35	30	25	20	15	10	5
Cases without carditis												
with chorea	30	25	20	15	10	7.5	5	2,5		• • •	• • •	• • •
without chorea	aspi	rin 7	0-100	mg/K	g/day	for 8	wks					

Table I. Therapeutic Schedule for Rheumatic Fever (By the Study Group of the Ministry of Health and Welfare, Japan, 1970)

Table	II.	Appearance	of	Cardiac	Murmu	r During	the
	A	iministration	of	Antirheu	imatic I	Drugs	

Time interval from the onset to the start of the drugs	within 2 weeks	2 to 6 weeks	over 6 weeks
Steroid hormone			
large dose	0/13	0/16	0/19
moderate dose	2/30	2/27	1/29
small dose	1/15	1/17	0/9
Aspirin	2/6	1/4	1/1

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Time interval from the onset to the start of the drugs	within 2 weeks	2 to 6 weeks	over 6 weeks
Large dose	14/15	14/22	13/37
	(93%)	(64%)	(35%)
Moderate dose	3/3	6/8	2/13
	(100%)	(75%)	(15%)
Small dose		0/4 (0%)	1/9 (11%)

Table III. Disappearance of Cardiac Murmur After the Steroid Hormone Treatment

Table IV. Mean Period for the Disappearance of Cardiac Murmur (presented by month)

	lst group	2nd group	3rd group		
Large dose	1.9	11.9	16.7		
Moderate dose	4.3	13.3	24.5		
Small dose					

II. Disappearance of cardiac murmur in the cases treated with various doses of steroid hormone preparations

The disappearance rate of cardiac murmur after the administration of steroid hormone preparation was as in Table III. Almost all cases, in which the treatment started within 2 weeks after the onset of the disease, the cardiac murmur has disappeared. In only 1 case in the group, which showed mitral regurgitant murmur, the cardiac murmur has persisted but with a regression after 8 years from the onset of the disease. In the group, in which steroid therapy started between 2 and 6 weeks after the onset of the disease, the cardiac murmur disappeared in about three-fourths of all cases. In cases, in which the start of the therapy delayed more than 6 weeks after the onset of the disease, a marked difference was observed in the disappearance rate of the cardiac murmur according to the dose of steroid hormone. Even in the large dose group the disappearance rate of cardiac murmur of the later group was worse as compared with the early therapy group.

III. Period before the disappearance of cardiac murmur after the treatment

The mean period for the disappearance of cardiac murmur in the cases in which cardiac murmur has regressed during observation period after the treatment was shown in Table IV. The mean interval for the disappearance of a cardiac murmur in the large dose group was; the earliest group, 1.9 month, the earlier group, 11.9 months and delayed group, 16.7 months. A

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longer time was necessary for the cardiac murmur to disappear in groups in which the steroid hormone therapy started more than 2 weeks from the onset of the disease. The disappearance of cardiac murmur was noted even 2 or more years, occasionally even 10 years, after the treatment.

DISCUSSION

Many reports concerning the therapeutic effect of steroid hormone in rheumatic carditis has been published. The joint report of the United Kingdom and the United States^{1),2)} did not find any favorable effect of steroid hormone in the long term observation on rheumatic carditis, which was treated with steroids or salicylate. But some authors argued the shortage of the dose of steroid administered to the cases of the joint study of the United Kingdom and the United States. Many authors have recognized a favorable effect of steroid hormone and noticed a decrease in the incidence of residual cardiac damage as an effect of steroid hormone when it was used at the initial stage of the disease with an adequate dose and enough duration to suppress rheumatic activity.^{4)~8)} Now it is well known that the antigranuloma action of the steroid hormone as one of its pharmacological actions is very strong and aspirin has only minimum antigranuloma activity.

The authors' results suggest a favorable effect of steroid hormone on rheumatic carditis and also give some suggestion about the dosage and administration schedule of the steroid hormone. Our results revealed that prednisolone under 30 mg per day as a starting dose could not suppress the development of rheumatic carditis. The results, that in the cases which received prednisolone more than 40 mg a day as a starting dose no cardiac murmur appeared, suggest that over 40 mg a day of prednisolone is necessary for suppressing the activity of rheumatic carditis.

The disappearance rate of the cardiac murmur treated with steroid hormone suggests that the earlier start of the steroid hormone therapy brings on better therapeutic result. On the contrary, it was suggested that a larger dose of steroid hormone was considered to be necessary for the treatment of rheumatic carditis in which the start of the therapy was delayed more than 6 weeks after the onset of the disease.

Thus, the authors established a therapeutic schedule for the rheumatic patients shown in Table I. The steroid hormone therapy should be always accompanied with enough bed rest and initial administration of large dose of penicillin or erythromycin and subsequent prophylactic administration of penicillin. As for patients of rheumatic fever without carditis, the authors prefered salicylate in place of steroid hormone for preventing the over adVol. 17 No. 5 RHEUMATIC CARDITIS AND STEROID HORMONE

ministration of the steroid hormone for the patients of rheumatic fever without carditis as well as for the patients with high ASO titer and not satisfying the revised Jones diagnostic criteria for rheumatic fever.

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