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Evaluation of Steroid Therapy for Vestibular Neuronitis

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Abstract The effect of steroid therapy for vestibular neuronitis was evaluated comparing with that of non-steroid therapy. Twelve cases were treated with steroid therapy and fourteen cases were treated with non-steroid therapy. All cases had no response of caloric test at the onset and underwent therapy within one month since onset.

The results were as follows : Dizziness was significantly reduced by steroid therapy compared with non-steroid therapy. However, there was no difference of subsiding period of spontaneous and positional nystagmus and recovery of caloric response between the steroid group and the non-steroid group.

Key Words : Vestibular neuronitis, Steroid

Introduction

There were many unknown problems about the cause, site of lesion and pathology of vestibular neuronitis. At present, conservative treatment is being performed against this disease and the relationship between the therapeutial means and this disease has not been discussed.

The treatment protocol was set at our department in order to compare any difference in the results of the neurotological examinations between the steroid group and the non-steroid group. Following 3 points for comparisons are the change in subjective symptoms, the change in spontaneous and positional nystagmus and the change in caloric response.

Subjects

Sixty-five cases of vestibular neuronitis were examined from 1972 to 1986 at the Neurotological Clinic of Yamaguchi University Hospital. The cases in which caloric response was not observed at the initial examination and the treatment was started within one month after the onset were selected for strict comparison of the therapeutic results. Of these, 12 cases of the steroid group and 14 of the non-steroid group were used. (Steroid group : male 6 cases, female 6 cases, average age 41.8 years old. Non-steroid group : male 9 cases, female 5 cases, average age 46.9 years old.)

Treatments

Administration of steroid is basically consisted of " large dose and then decreasing method ", i. e., a large amount of steroid for a short period at the beginning and decreasing doses day after day gradually. The initial dose for an adult is i.v. administration of 500-1000 mg/day hydrocortisone, or oral administration of 2-4 mg/day betamethasone and the doses are gradually decreased for the following 1-2 weeks, referring symptoms. Meanwhile, the non-steroid treatment consists of the metabolic and nerve activators

and circulation improving agents such as Meylon, ATP, vitamin B complex preparation and low molecular Dextran.

Results

1) Changes in subjective symptoms

In the present study, subjective complaints on the vertigo were defined into three categories i.e., rotatory vertigo, non-rotatory vertigo and symptom free. As the symptoms at the onset could be heard at the initial examination, symptoms at the onset, at 3 months and after one year were compared in this study. Table 1 shows the therapeutic results in the cases in which treatment was started within one month of onset. While 7 out of 10 cases of the steroid group did not complain vertigo at 3 months any more, symptom was improved only in 4 out of 13 cases of the non-steroid group. Furthermore, in the cases which we could observe after one year, non-rotatory vertigo was still seen in all the cases of non-steroid group indicating that satisfactory prognosis with respect to subjective symptoms was obtained significantly in the steroid group. Examination in the cases in which treatment was started within 2 weeks of onset, in particular, symptom was not observed in all the cases of the steroid group showing significantly good prognosis in relation to subjective symptoms. As for the non-steroid group, some patients complained symptoms, which were absent at 3 months, after one year again.

2) Changes in spontaneous and positional nystagmus

In the present evaluation, if gaze or positional nystagmus was observed in one

Table 1 The therapeutic results in the cases in which treatment was started within one month of onset.
( ) : The cases in which treatment was started within 2 weeks of onset.

The results at the 3 months :

The steroid group

	rotatory vertigo	non-rotatory vertigo	symptom free
onset	10(8)		
3 months	1(1)	2(2)	7(5)

The non-steroid group

	rotatory vertigo	non-rotatory vertigo	symptom free
onset	13(9)		
3 months		9(6)	4(3)

The results after one year :

The steroid group

	rotatory vertigo	non-rotatory vertigo	symptom free
onset	6(5)		
3 months		2(2)	4(3)
one year		1	5(5)

The non-steroid group

	rotatory vertigo	non-rotatory vertigo	symptom free
onset	9(7)		
3 months		7(6)	2(1)
one year		9(7)	

gaze direction or at one head position, then, we judged that nystagmus was present in that case. Examination was carried out at the initial examination, at 3 months and after one year and their results were compared. Table 2 shows the results of the patients who started treatment within one month. Nystagmus was not observed in 5 out of 11 cases in the steroid group and 4 out of 11 cases in the non-steroid group without indicating a distinct difference. Results did not differ much even after one year. In both groups, nystagmus tended to continue in ten cases in which the symptom did not disappear at 3 months. A distinct difference was not observed between the two groups even when the cases in which treatment was started within 2 weeks were examined specifically. Gaze nystagmus was seen at initial examination in both groups. In some cases of the non-steroid group, nystagmus, which had disappeared at 3 months, started again after one year. Gaze nystagmus was not observed in any case after one year.

3) Changes in caloric response

Fig. 1 shows the changes in caloric response in the steroid group while Fig. 2 shows those in the non-steroid group. In both groups, all the cases which recovered normal caloric response had recovered within one year already. No difference was found in the recovering tendency in either group.

Discussion

Effects of the steroid agents can be largely divided into two types. One is a hormonal effect and the other is a pharmacological effect. Pharmacological effect includes anti-inflammatory and immuno-inhibitory effects as well as anti-allergic effect. Steroid therapy supplements a hormone secretion which affects a hormonal effect and elicits a pharmacological effect. Sensitivity to steroid

Table 2 The examination results in the cases in which treatment was started within one month of onset.
( ) : The cases in which treatment was started within 2 weeks of onset.

The results at the 3 months :

The steroid group

	gaze and positional nystagmus	positional nystagmus	no nystagmus
initial exam.	9(9)	2	
3 months	1(1)	5(4)	5(4)

The non-steroid group

	gaze and positional nystagmus	positional nystagmus	gaze nystagmus	no nystagmus
initial exam.	9(7)	2		
3 months		6(4)	1(1)	4(2)

The results after one year :

The steroid group

	gaze and positional nystagmus	positional nystagmus	no nystagmus
initial exam.	4(4)	2	
3 months		3(2)	3(2)
one year		3(2)	3(2)

The non-steroid group

	gaze and positional nystagmus	positional nystagmus	no nystagmus
initial exam.	7(5)	2	
3 months		6(4)	3(1)
one year		6(5)	3

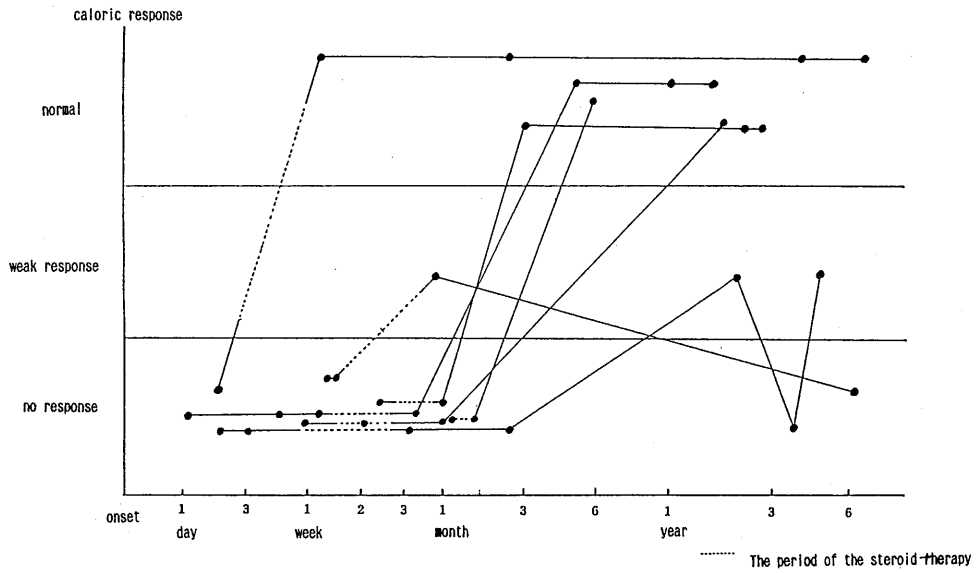

Fig.1 The change in caloric response in the steroid group

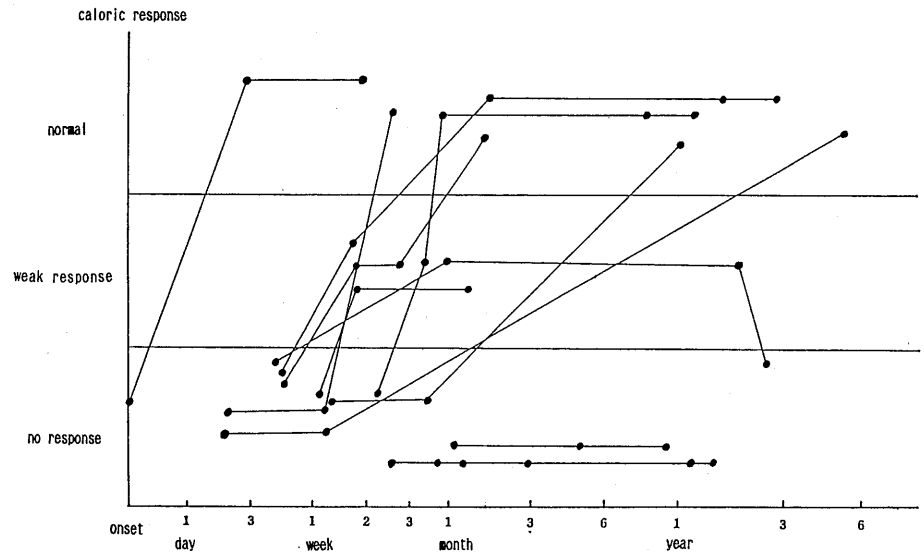

Fig.2 The change in caloric response in the non-steroid group

is considered low in the pathological tissue so that a large amount of a steroid agent is required if one expects a pharmacological effect. For a disease such as vestibular neuronitis in which severe symptoms appear in a short period, a high dose administration of a drug is considered most efficient to obtain anti-inflammatory effect. And so, we have been conducting a therapy starting with a large amount of steroid for a short period then decreasing the dose gradually.

In the present study, subjective symptoms improved significantly in the steroid group. We consider that this difference is produced by the pharmacological effect of the steroid agents yet its mechanism has not been clar-

ified. Pathology of vestibular neuronitis suggests an extremely marked localized change or inflammation occurs in the disease. Kitano[1] stated that a combined therapy of isosorbide and steroid was effective to non-rotatory vertigo in Meniere's disease. Non-rotatory vertigo was also a problem in the present study, and it may be possible that a steroid agent is effective towards symptoms of non-rotatory vertigo.

With respect to the changes in spontaneous and positional nystagmus, however, no significant difference the steroid group and the non-steroid group was observed. Nystagmus elicitation decreased in all the cases of vestibular neuronitis examined. And so, evaluation of the changes of nystagmus was not possible to estimate the effect of steroid.

Vestibular neuronitis is believed as the sudden loss of the vestibular function with a suspected pathological changes in the vestibular ganglion, as if sudden deafness as a result of the sudden loss of the cochlear function or Bell's palsy in the sudden lesion of the facial nerve. In sudden deafness, Kirikae[2] states that threshold value is fixed within 14 days by examining an overwhelmingly large number of cases. Hosomi[3] reported that complete recovery of Bell's palsy could be expected in those which showed signs of improvement within 2 weeks after the onset ; these mean that the earlier the sign appeared, the better prognosis was.

Generally, these findings suggested that a period of 2 weeks from the onset of the peripheral nerve disturbance is an important time limit for treatment. According to these knowledge, the present evaluation of vestibular neuronitis was done in the cases in which treatment was started within 2 weeks. It was noteworthy that subjective symptoms disappeared completely in all the cases of the steroid group. Thus, the cause for vestibular neuronitis is expected to resemble with those of sudden deafness and Bell's palsy. As virus theory is promising as the cause for the latter diseases[4,5], virus infection can be suggested for vestibular neuronitis as well. Despite numerous reports supporting the virus infection theory as the cause of vestibular neuronitis[6,7], conclusion has not been drawn at the present state. Therefore, we consider that speculation of the cause and pathology with therapeutical means like the present study is one of the way of clarification. It seems necessary to conduct steroid administration in fresh cases of vestibular neuronitis and make comparison between these and a non-treated group as well as to conduct comparative studies between the disease and Hunt's syndrome, sudden deafness and Bell's palsy.

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