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ON THE INDICATION OF THE MICROLARYNGOSURGERY FOR HOARSENESS IN CHILDREN

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In children as well as in adults, hoarseness is one of the most important symptoms indicating laryngeal pathology. When we see a young patient who has a hoarse voice, we should consider various possible causative diseases such as vocal cord nodule, cyst, papilloma, sulcus vocalis, recurrent laryngeal nerve palsy, etc. Among these, as far as incidence is concerned, laryngeal nodule and vocal cord edema are the most frequent.

In order to correct these conditions, various methods have been proposed, which can be categorized into two groups. One is "voice therapy" and the other is "surgical removal with voice training". In this paper, we will discuss the indications for the surgical treatment of the laryngeal nodule in children.

Statistical study

During the last ten years, in the Voice and Speech Clinic of Kitasato University Hospital, 155 cases between ages of six and fifteen were examined and treated. The diagnoses of these patients are listed in table 1. One hundred forty-four out of 155 cases (92.9%) were diagnosed as having laryngeal nodule, and 122 of these were treated by microlaryngosurgery. The total number of cases we had operated on microlaryngosurgically during the same period was 944, thus, the number of cases in this young age group was 13% of our total microlaryngosurgery cases.

Table 2 shows the age distribution of the 122 cases operated on. We can see a high incidence between the ages of 8 and twelve. Removal of the nodule in these cases was done by means of microlaryngosurgery under general anaesthesia.

As far as sex is concerned, the ratio of male to female was 6 to 1.

Since as previous investigators have reported, one of the causative factors of laryngeal nodule in children is vocal abuse or the habitual use of loud voice, to see the recurrence of nodules even with vocal rehabilitation is understandable. Table 3 indicates the incidence of the recurrence of laryngeal nodule after surgery. It is surprising that a high incidence of up to 33% of the cases operated on can be seen at the age of 7, and a relatively higher incidence at the age of 8. But after the age of 9, the incidence of recurrence markedly decreased. From our clinical records of these cases, two thirds of such cases happened within 3 months.

Educational remarks

After presenting these statistical evidences, we discussed the educational points of the surgical treatment of laryngeal nodules with 39 school teachers who were all specialists in the education of handicapped children. These 39 teachers gave us very instructive opinions from their educational point of view. I would like to introduce their opinions about the influence of hoarse voice.

First, the teachers mentioned problems concerning the character formation of the children. That is, hoarseness makes children passive, and they may maladapt in class. Sixteen teachers out of 39 have anxiety regarding this problem.

Next, teachers are afraid that such children may dislike music and vocal performance because of their hoarseness. These teachers prefer that such children have their nodule removed.

On the other hand, since children with hoarse voice are essentially very active and outgoing in character, it may not be necessary to warry about them becoming passive. The number of teachers who have this latter opinion was 9. These teachers do not recommend microlaryngosurgery for these children. (Table 4)

Of course, the indication for microlaryngosurgery is determined case by case. The question is in what situations is surgery preferable. The answers are listed in table 5.

First, the operation should be performed if children feel concerned about their voice quality. This may be a cause of passive character of children. Next, if the hoarse voice causes any problems in school life or study, an operation is preferable, since maladaptation to normal school life is possible. Even if the hoarseness is not too bad, often children are aware of their hoarseness. In this case, an operation is preferable. Another reason is to correct ill habits of phonation. In order to teach good phonatory habits, it is essential to have a normal larynx. Teachers who have these opinions prefer that these children undergo microlaryngosurgery.

On the other hand, there were 8 teachers who did not like the idea of surgery. Their reasons were that

1. spontaneous healing after mutation can be expected; and that
2. the surgery itself has a negative influence on some children.

Discussion

There are various kinds of diseases which may cause a hoarse voice in children. From our statistics (table 1), although the majority (92.9%) of young patients with hoarse voice have laryngeal nodule, we can also see other diseases such as vocal

cord cyst, papilloma, sulcus vocalis, recurrent laryngeal nerve palsy, etc. This fact indicates that we should be careful about diagnosing the problem of children with hoarse voice. Hoarseness is not always produced by laryngeal nodule. In general, it is often difficult to examine children's laryngee because oftheir strong gag reflex and incooperativeness. In our clinic we have been using a fiberscope or direct laryngoscope with mild pre-examination sedation, besides the usual indirect laryngoscope. Of cause, we have to choose the most suitable and most convenient tool to make a precise diagnosis.

As far as cases with laryngeal nodule or edematous vocal cord, which are the commonest causative pathologies for hoarseness in children, are concerned, there have been various reports concludingthat these pathological conditions can subside spontaneously after mutation. Maekawa[1] reported from his follow-up survey on a group of subjects, that hoarseness improves year by year. Also, an abrupt increase in the recovery rate can be observed between the ages of 11 and 12. From this fact, it can be expected that children with hoarse voice will return to normal voice after the age of 12 even without any treatment.

Since the problems caused by hoarseness are evident before this particular period, it is preferable thast the pathological condition be corrected as early as possible. On the other hand, the recurrence rate for laryngeal nodule after surgery decreases after the age of 8. Taking these facts into account, it can be concluded that if an operation is necessary, it should be done around age of 8.

Reference

1. Maekawa,H.(1973); Observation on the hoarseness of school children,J.Otolaryngol.Jpn,76,1459-1471.

Nodule	Microlaryngosurgery	122
	Direct Laryngoscopy	22
Cyst		2
Papilloma		1
Sulcus vocalis		1
Rec.n.palsy	unilateral	6
	bilateral	1
	Total	155

Table 1: Number of cases(1971-1981)

Age	No. of cases
6	1 (0)
7	9 (0)
8	37 (4)
9	25 (2)
10	16 (3)
11	12 (0)
12	11 (4)
13	6 (3)
14	4 (1)
15	1 (1)
Total	122 (18)

( ); Females

Table 2: The age distribution of the 122 cases operated on.

Age	No. of rec.	%
6	0 / 1	
7	3 / 9	33
8	10 / 36	28
9	2 / 22	9
10	1 / 14	7
11	0 / 6	
12	1 / 9	11
13	1 / 6	17
14	0 / 4	
15	0 / 1	
Total	18 / 108	18

Table 3: Incidence of recurrence. (from Takemoto)

Hoarseness may cause	
Character problems	16 / 39
Problems with studies	7 / 39
No problems	9 / 39
Others	7 / 39

Table 4: Possible problems caused by hoarseness.

Preferable	31 / 39
Feel there is disadvantage	18
Problems with school or study	6
Feel too much concern about hoarseness	5
To correct ill habits in phonation	2
Not preferable	**8 / 39**
Spontaneous healing	3
Bad influence of an operation	2
Others	3

Table 5: Teachers' opinions about operation.