소아재활

발표일시 및 장소 : 10 월 19 일(토) 10:10-10:20 Room D(5F)

OP4-1-2

Development of questionnaire for screening ocular torticollis in children with abnormal head posture

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Introduction

The objective of the present study was to develop a questionnaire based on clinical features commonly found among children who are being assessed for ocular strabismus.

Method

To construct the items and questions for head tilt assessment tool, literature review was performed, starting with articles about head tilt and subsequently including those on torticollis, abnormal posture, and abnormal head and neck position. In addition, clinical symptoms associated with head tilt when examining patients with torticollis were derived and listed. Based on the process describe above, the final single-response parent-report questionnaire containing 10 questions on direction of head tilt direction, degree of tilt, severity of restriction in neck range of motion, ocular position and focus, and facial asymmetry was completed. The composition and content of the questionnaire were as follows (Table 1). The developed questionnaire was performed to the parents of our patients.

Results

Of the 47 patients, 34 and 13 patients were assigned to the non-ocular torticollis and ocular torticollis groups, respectively. Among ten questions, five questions finally selected (bold questions in Table 1) were scored from the lowest 0 to the highest 5 points, with the same weight assigned to each item. The results showed that the mean score of the ocular torticollis group (3.385 ± 0.869 points) was significantly higher than that of the non-ocular torticollis group (2.118 ± 0.869 points) (p=0.000). When the optimal cut-off value was estimated by the ROC curve for the sensitivity and specificity of the five questions used for diagnosing ocular torticollis diagnosis, the AUC of the ROC curve was 0.834, showing statistically significant results (Fig. 1). The score with the highest sensitivity and specificity on the ROC curve was 3 points, with sensitivity of 84.62% and specificity of 67.65% (Table 2).

Discussion

The head tilt assessment questionnaire developed in the present study demonstrated diagnostic efficacy for ocular torticollis. When three of five questions that were determined to have determinant power were used as the cut-off points, the results

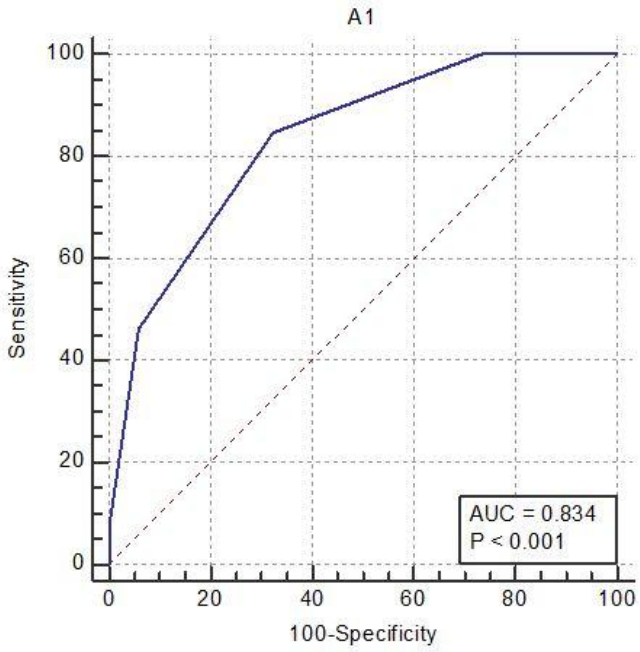
confirmed high sensitivity and reasonable specificity. From this questionnaire, it appears that with reasonable assurance one can identify the ocular cause of torticollis on the basis of parent reported clinical features of the child. Similar clinical findings are observed from wide range of disorders affecting head postures. In particular, when children are examined for possible head tilting, they are often under the age of 1 year when their cooperation may be limited. It is important for well-informed primary clinician to be aware of the clinical features and physical findings of ocular torticollis to refer the patient to an ophthalmologist when necessary.

Conclusions

The parent-report head tilt assessment questionnaire that was developed in the present study could be useful for screening ocul

Table 1. Head tilt assessment questionnaire

1	**Is the direction of head tilt in your child always the same?**	Yes	No
2	**When you point out the head tilt, is your child able to straighten the head position on his or her own?**	Yes	No
3	Can you hold your child's face to straighten his or her neck?	Yes	No
4	Does your child's degree of head tilt change?	Yes	No
5	**Does the tilt get worse when your child is gazing at an object?**	Yes	No
6	Does your child turn his or her head while his or her is tilted?	Yes	No
7	Is your child able to turn his or her head to the left and right to a similar degree?	Yes	No
8	**Does your child blink or squint one eye?**	Yes	No
9	**Do your child's eyes appear out-of-focus at times?**	Yes	No
10	Does the outer appearance of your child's head, face, and neck seem asymmetrical?	Yes	No



AUC, Area Under Curve ; ROC, Receiver Operating Characteristic

Figure 1. AUC of ROC curve

Table 2. Criterion values and coordinates of ROC curve

Criterion	Sensitivity	95% CI	Specificity
≥1	100	75.3 - 100.0	0
>1	100	75.3 - 100.0	26.47
>2	84.62	54.6 - 98.1	67.65
>3	46.15	19.2 - 74.9	94.12
>4	7.69	0.2 - 36.0	100
>5	0	0.0 - 24.7	100

ROC, Receiver Operating Characteristic; CI, confidence interval