

Clinical Studies on Positional Nystagmus

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According to Nylén (1950)¹⁾, positional nystagmus is one of the surest, most objective and most easily demonstrated sign of disturbance in the human vestibular system. And also, he described that the presence of positional nystagmus makes it apparent that a disturbance is present in the vestibular system.

Evaluation of clinical diagnostic significance of the positional nystagmus are attempted to clarify several questions, such as relation between types of the positional nystagmus and disease localization, occurrence of positional nystagmus and positioning nystagmus in the various diseases; and furthermore, which has more significance either positioning test or positional test.

The paper presented the results of positional test and positioning test those which are performed as routine otoneurological examination on the patients with vertigo and disequilibrium or with otologic disease at Yamaguchi University Hospital during 1975 (January) to 1976 (September).

As usual manner²⁾, observation of the nystagmus is carried out with the eyes open in a dim light room and then behind the Frenzel glasses; and simultaneously recorded with electronystagmography (ENG) (both horizontal and vertical leads).

CLINICAL FINDINGS AND COMMENTS

Three hundred and ten cases were examined by routine otoneurological examination (Table 1). Among them, 171 cases who showed positive finding by so-called positional test for the provoked nystagmus were sorted out from the data files. In other words, 55.2% of the total patients examined showed some kind of positional and/or positioning nystagmus.

The 105 cases among 171 cases showed the positive finding by both positional and positioning test.

Positive finding was observed in positional test, in 46 cases (26.9%).

Table 1. 310 cases examined during Apr. 1975 to Sept '76.
171 cases, positive positional nystagmus

positive of:	No. of case		Group
positional + positioning	105	61.4%	A
positional	46	26.9%	B
positioning	20	11.7%	C
	171		

Positive "positional nystagmus" in the cases examined at Otoneurological Clinic of Yamaguchi University Hospital.

Table 2. Disease entity of 171 cases with positive positional nystagmus and/or positioning nystagmus

central lesion	42
cervical lesion	9
peripheral lesion	100
unknown	20
	171

Positive finding of so-called positional nystagmus (abbr.: P.N.) was observed in 20 cases (11.7%).

Disease entity of 171 cases with positive positional nystagmus and/or positioning nystagmus are grossly defined based on the final clinical diagnosis including surgically confirmed diagnosis (Table 2).

It consisted of: 42 cases due to central lesion; 9 cases due to cervical lesion; peripheral lesion, 100 cases; even after thorough examination of the otoneurological and neurological studies were performed, there are 20 cases of them remained "unknown cause" with dizzy feeling in various degree.

Classification of types of positional nystagmus based on Nylén's descriptions was applied to Group A (105 cases) with positive nystagmus in both positional and positioning tests. In this group (Table 3), positional test revealed positive findings as follows: Type I, i.e., 'direction-changing positional nystagmus' was seen in 13 cases (12.4%); Type II, direction-fixed, was seen in 45 cases (42.9%), and Type III, irregular in direction, was seen in 47 cases (44.7%). And meanwhile by the positioning test, i.e., quick position changing test, various kinds of nystagmus were elicited. Type I, 'direction-changing P.N.' was seen in 5 cases (4.8%), Type II was in 43 cases (41.0%) and Type III, irregular type, 57

cases (54.2%). In other words, by positioning test, direction-changing positional nystagmus decreased in number and varied in its manifestation.

There was no marked difference in Type II between the positional test and positioning test; i.e., 45 cases vs. 43 cases, 42.9% and 41.0%, respectively. This is one of notable findings.

Table 3. Type of positional nystagmus and disease entity
—In cases with positive positional and positioning test—

	Direction changing	Direction-fixed Horizontal	Irregular
central	3	10	12
cervical	0	3	2
peripheral	10	28	23
unknown	0	4	10
	13	45	7

Table 3 showed the number of occurrence of positional nystagmus interrelating between the classified type and disease entity among Group A.

First, group of central lesion showed every type of positional nystagmus; 12 cases were seen as irregular type (48%); 10 cases as direction-fixed, and 3 cases as direction-changing. Nylén's Type II, direction-fixed nystagmus, was seen rather in higher percentage in our cases with central origin.

In group of the peripheral lesion, 28 cases showed direction-fixed nystagmus (45.9%). However, there was 23 cases showing irregular type (37.7%).

Here, briefly comparing between central origin group and peripheral group, "irregular P.N." was seen in 48% and 37.7%, respectively.

In group of cervical origin and group of unknown lesion, there was no direction-changing nystagmus observed. One of the remarkable findings was that a considerable number of patient with unknown origin vertigo showed irregular type (71.4%). This means that some of these unknown cases will have "not detected origin" in a central region.

Table 4 showed type of positional nystagmus in each testing, i.e., positional test and positioning test and disease entity of the group A with central origin.

Table 4. Type of positional nystagmus in each testing and disease entity (Group A)
Central lesion (25 cases)

	Direction-changing		Direction-fixed	Irreglaur
	upward	downward		
positional nystagmus	2	1	9 (36%)	13 (48%)
positioning nystagmus	2	0	7 (28%)	16 (64%)

(Group A: positive by both positional test and positioning test.)

By positional test, among total 25 cases, there was direction-fixed P.N., 10 cases (40%); irregular P.N., 12 cases (48%).

And then, positioning test yielded slight different finding of P.N., i.e., some cases with direction-fixed type by positional test showed different finding to irregular P.N. by positioning test. Number of cases showing the irregular P.N. by positional test increased after positioning test (from 48% to 64%).

In the cervical origin vertigo cases, there was no marked change or difference between positional test and positioning test. There was no Type I, direction-changing P.N. in this group.

In group of the peripheral lesion (61 cases), number of cases with direction-fixed positional nystagmus by positional test apparently increased by positioning test (from 45.9% to 52.2%); in contrary, number of direction-changing nystagmus decreased by positioning test, noticeably (from 16.4% to 5.0%).

In the group of unknown origin vertigo (14 cases), direction-fixed P.N. by positional test changed to irregular P.N. by positioning test in two of 4 cases.

Above all, as brief summary after comparing two testings, there are some tendency to show that positioning test yield higher manifestation of irregular nystagmus in a central lesion case, and higher manifestation of direction-fixed nystagmus in the group of peripheral lesion.

And some of notable changes is a marked decrease of direction-changing nystagmus after positioning test in the peripheral lesion.

OKP-ETT abnormality and Positional Nystagmus:

Additionally, evaluation of occurrence of abnormal finding of optokinetic nystagmus (examined by Optokinetic pattern test, OKP) and eye

Table 5. Relation between positional nystagmus (Types) and OKP-ETT abnormality—%expression in group A—

	Type I		Type II	Type III
	Up-	Down-		
central	33.3(33.3)	0	70.0(60.0)	79.2(66.7)
cervical	0	0	16.7(0)	50.0(50.0)
peripheral	50.0(33.3)	12.5(0)	28.6(14.3)	50.0(39.1)
unknown	0	0	50.0(25.0)	35.0(10.0)

() : abnormal both OKP and ETT.

Frequency of abnormal findings observed in both positional test and optokinetic pattern test(OKP)or eye tracking test (ETT), expressing as percentage.

tracking test (ETT) in the cases with positive positional nystagmus was made.

This concerned much in the group of cases with both positive by positional test and by positioning test.

The results showed in Table 5. The numbers are expressed by percentage, showing how there are differences between each disease entity, and showing relationship between the type of P.N. and OKP-ETT abnormality.

Concentrating our mind on the data of group of Type III of positional nystagmus, the central lesions showed abnormal OKP and/or ETT of 79.2%, and 66.7% of central lesions showed abnormal in both OKP and ETT.

In contrary, in the peripheral lesions, 50.0% showing abnormal finding in either OKP or ETT, but only 39.1% showed in both tests. This suggests that combination of positional test and OKP or ETT test will give meaningful information for clinical diagnosis.

ONCLUSIONS

1. Positional nystagmus in wide sense manifested by positional and positioning test was seen in 55.2% of whole cases who were otoneurologically examined at the University Hospital (171 cases among 310).
2. Positioning test will elicit irregular type positional nystagmus much more than the positional test. And this tendency was relatively high in the central lesion than the peripheral lesions.
3. Direction-fixed positional nystagmus appeared high percentage in the central lesions in this series, though textbook described as "direction-

fixed as high incidence in the peripheral lesion”.

4. Also, direction-changing nystagmus was seen rather frequent in the peripheral lesion, than the expected.

Above all, its interpretation should not be fixed by the statements which appeared in the textbook, but positive findings suggest strongly the necessity of farther examinations and of the follow-ups.

REFERENCE

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