

Portable Videonystagmography

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Abstract: Portable videonystagmography is equipment to detect nystagmus or other eye movements independent from time, place and medical specialists. It has been demonstrated that patients suffering from Ménière's disease have been diagnosed earlier using portable videonystagmography.

Key Words: portable videonystagmography, Ménière's disease, vestibular disorders.

INTRODUCTION

Patients suffering from recurrent dizzy spells, loss of hearing, tinnitus, and vertigo are usually diagnosed as Ménière's patients. This diagnosis, usually is made by taking the history, hearing tests, and different vestibular tests, i.e., observation of spontaneous and provoked nystagmus. If nystagmus and abnormal vestibular function is absent, the diagnosis is less plausible and therapy can be performed earlier. This equipment can detect abnormal eye movements in patients who are suspected to have Ménière's disease, and was designed to allow the patient to be independent from medical specialists for the recording of eye movements.

METHOD

Recording of eye movements can be carried out by electronystagmography (ENG), photoelectronystagmography (PENG), and videonystagmography (VNG). Wolf et al.¹ demonstrated the first practicable portable ENG based on research work of Watanabe.² The disadvantages are highly temperamental for artifacts and limited comfort in use.

To overcome these disadvantages, goggles fitted with a mini video camera (Fig. 1) were constructed and connected with the smallest available video recorder from the Sony Company (Fig. 2). Power supply for the camera and the recorder is guaranteed by batteries or accumulators. The equipment is installed in a bag (Fig. 2).

Patients are instructed to start the recorder and to put on goggles when dizziness occurs. After a few minutes, the patient takes off the goggles and stops recording. Recorded eye movements can be analyzed afterwards by counting nystagmus beats on the screen or by running a computer program. If nystagmus is visible, the diagnosis of Ménière's disease is much more likely than without.

AREAS OF APPLICATION

Portable videonystagmography can be used in hospitals for teaching purposes, to record eye movements on the ward and for medical legal determinations. Patients can carry the bag with the machine to their home and use it indoors or at work to objectively record their complaints.

RESULTS

Application of portable videonystagmography has shown high acceptance by our patients and was carried out without complications in use or a break-down of the equipment. The quality of the video tape was high and allowed us to precisely differentiate between a nystagmus, fixation movement, and other pathological eye movements. It is a reliable and comfortable method to verify or exclude vestibular induced dizziness.

CONCLUSION

Detection and recording of nystagmus in combination with dizziness is an important tool for the physician to draw conclusions in order to find the diagnosis of peripheral vestibular alterations. To ease the recording of eye movements out of the hospital and to give the basis for earlier therapy, portable videonystagmography has shown its importance in the test battery of vestibular disturbances.

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Fig. 1. Goggles with video camera



Fig. 2. Portable Videonystagmography with Video recorder