VAN DISHOECK's CONTINUOUS AUDIOMETRY AS AGGRAVATION TEST

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In his summary, Mr. Moderator has defined the aggravation as a conscious and voluntary overlay of an organic deafness.

That means:

1. The aggravating patient suffers from a hearing defect.
2. The degree of his hearing loss is lower than he states.

The audiometric aggravation is favoured by the common method of threshold measuring. The tone threshold is measured either with constant testing frequencies by changing the intensity (octave audiometry) or with constant intensities by continuous changing the testing frequencies (continuous detail audiometry according to VAN DISHOECK). In spite of several advantages of continuous audiometry (VAN DER WAAL and VAN DISHOECK) the octave audiometry is being used more frequently in hospital and in office. Both methods give the same conditions for the non-aggravating patient, who only has to declare whether he hears the testing tone or not. But for the aggravating patient, who wants to reproduce a wrong threshold curve, octave audiometry and continuous audiometry lead to difficulties of a very different degree.

a) Octave audiometry:

The examiner gives 6—14 different probe sounds into the hearing area and marks the given quantity of the sound. The aggravating patient only has to do two things:

1. to differentiate and to recognize the testing frequencies,
2. to bear in mind and to reproduce the quantity that he has given the different sounds (the proclaimed threshold intensity).

This is supported by the fact that he can do both not simultaneously but successively. In all modifications of octave audiometry the aggravating patient first hears the testing frequency. He is able to recognize the probe sound and has to deal with the quantity — the intensity — afterwards. Furthermore, most examiners have a certain scheme in octave audiometry. This alleviates a skilled aggravator to reproduce wrong threshold statements.

Practical experience proved that a reproduction of a to bad given octave audiometric threshold curve is possible. Only 2 testing persons out of GUNDRUM's 48 could reproduce an aggravated hearing threshold, but HAGER found practically the same variation as in true tone audiograms; he therefore demands a repeated measurement a few days afterwards. This certainly will not always be possible in hospital or in office. A routine aggravation test ought to be taken simply, fast and in one session. WAGEMANN's experienced

aggravants could find their pretended threshold even after several days.

b) Continuous detail audiometry:

In this we cut the hearing area into horizontal layers and mark the limiting frequencies where each layer begins or ends. The aggravant therefore is not able to bear in mind the different sound probes and quantities, because he has to deal with unnumerous and always changing probes, i.d. the testing frequencies. Moreover the probes always change their quantity (the subjective loudness) because the horizontal cuts through the hearing area do not follow the isophonics. Therefore, the two critical and correlating hearing parameters frequency and intensity change continuously. It is impossible to judge them successively in continuous audiometry, the aggravant has to recognize and to differentiate them simultaneously.

It has been 11 years ago that VECKMANS stated that hardly one testing person was able to do so. He also defined the VAN DISHOECK audiometry as an ideal procedure to discover simulation. Our own experiments with persons who contrary to insurance patients were familiar with the acoustical impression of sinusoidal sounds proved the same.

It seems thinkable that an aggravating patient with a retentive acoustic memory could reproduce a continuous detail audiogram by keeping in mind the characteristics of the examiner, for instance the change of frequency as a function of time. But it seems to be impossible that he could find the same differences from the genuine curve in octave audiometry and continuous audiometry. Our simple routine test on aggravation bases on the comparison of the octave audiogram with the continuous audiogram. With adequate audiometers it is possible to register both curves over one another in the common audiographic coordinate system, and one can judge their correspondence. (fig. 1).

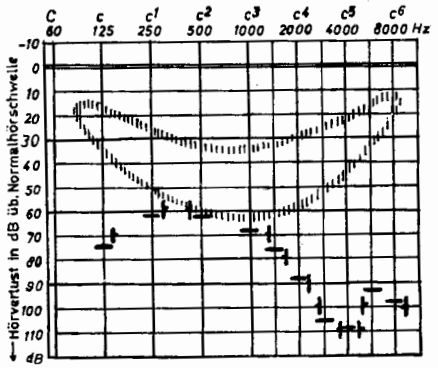

Fig. 1

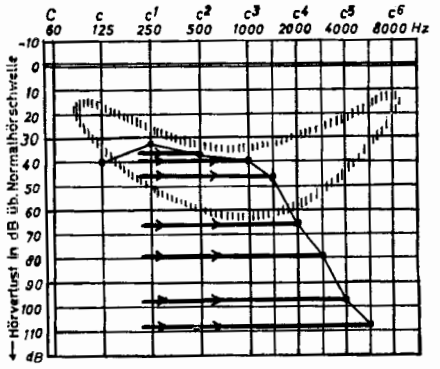

Fig. 2

Fig. 1. Hearing threshold measured by octave and continuous audiometry. Continuous detail curve written on an ordinary audiogram formular. Non aggravation.
Horizontal marks (—): Octave audiometry
Vertical marks (⊣): Continuous audiometry

Fig. 2. Modification of continuous detail audiometry in order to control the octave audiogram. The horizontal cuts through the hearing area thus placed that they meet the octave curve at the testing frequencies.

Practising detail audiometry for this test on aggravation one should

1) test the intensities in irregular sequence, f. i. 75, 30, 50, 60, 40, 30 db.
2) One should increase the intensities not in 5—10 dB intervalls but one should try to meat the octave curve at a testing frequency (fig. 2).
3) the change of frequency should be measured always in the hearing area, so that the patient has to mark the point when he does not hear anymore. Later a counter measuring defines the limit frequency as an additional aggravation test.
4) the speed with which the measurement is taken should correspond with the reacting time of the patient.

Suspected of aggravation are all differences of more than a third, or ± 10 dB, (fig. 3), greater deviations at increasing or decreasing testing frequency, especially, if one of the equals the octave threshold, "retrograde" slopes (fig. 4).

This test is not suitable for checking level threshold curves. At least in one octave has to be a decrease or increase of about 20 dB. 82,8 % out of 2000 pathological hospital audiograms, and 93 % of the pathological audiograms of insurance patients showed this course.

As another advantage we note that false judgements by tiring out of the cochlear receptors do not occur. In continuous audiometry the perceptive cell group which is concerned changes continuously. Several measurements can be taken during one session. As long as the testing person does not refuse to respond one is able to work out the exact hearing threshold rather closely.

The continuous detail audiometry — especially combined with octave audiometry in this simple manner — deserves an important place in the battery of aggravation tests.

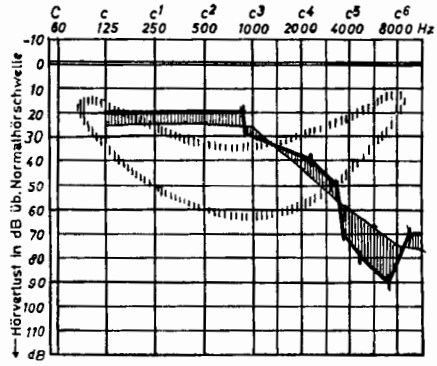

Fig. 3

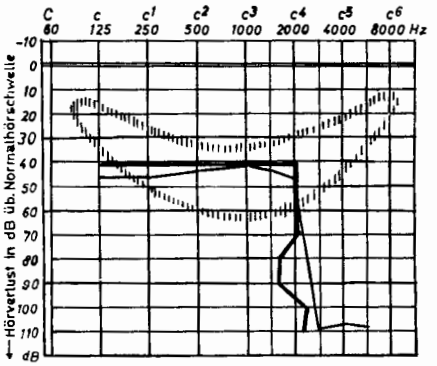

Fig. 4

Fig. 3. Little aggravation of a perceptive deafened. Continuous and octave threshold curve differ more than a third and/or 10 dB.
Fig. 4. Try of aggravation in a slope audiogram. "Retrograde" slope.

L'AUDIOMÉTRIE CONTINUE DE VAN DISHOECK COMME TEST DE SIMULTATION

L'examen audiométrique liminaire avec les fréquences constantes (audiométrie par octave) et l'audiométrie avec les intensités constantes pour des changements continuels de fréquences («audiométrie continue») demande les mêmes exigeances aux patients sincères: Ils doivent dire, dans les deux méthodes, s'ils entendent le son du test ou non. Par contre le sujet exagérant qui doit reproduire une courbe liminaire fausse aura beaucoup plus de difficultés avec l'audiométrie continue, qu'avec l'octave-audiométrie, car il doit en même temps juger 2 audiparametres, changeant continuellement. La reproduction des courbes liminaires aggravées est possible avec l'audiométrie par fréquences fixes, comme le montre la pratique; cela réussit seulement rarement avec le mesure par fréquences continues. La courbe liminaire continue n'est pas enrégistrée sur papier circulaire, comme l'a fait VAN DISHOECK, mais sur un simple formulaire d'audiogramme, et la mesure en est par conséquent un peu modifiée. Sont probantes d'une exagération: les differences entre la courbe par octave et la courbe continue de plus de 10 dB d'une largeur de tierce, les différences plus grandes entre une mesure continue avec la fréquence croissante et décroissante et une pente raide «rétrogradante».

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