Mesoptometry

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Mesoptometry is the testing of the visual acuity at mesopic adaptation levels. I would like to draw your attention to the usefulness of such measurements and to an instrument enabling such measurements to be made [Aulhorn and Harms, 1964].

It has been proved that at night a driver of a motor vehicle in general drives in a 'twilight condition', i.e. in the light of the head-lamps of his car he is in the mesopic adaptation area [Nolte, 1961]. Moreover, there is only a slight contrast between the objects on which a driver concentrates during driving, and the surroundings. In the daily practice other demands are made on the visual acuity of a driver than in the consulting room with the letter chart. The mesopic visual acuity is less than the photopic visual acuity; the weak contrast makes higher demands on the visual acuity than the optimal black-white contrast of the letter chart. In practice, one is in addition exposed to dazzling by oncoming traffic. This dazzling causes a transient but strong reduction of the visual acuity.

The mesoptometer of Aulhorn and Harms [1964] is constructed for the testing of the visual acuity at 2 mesopic adaptation levels (0.1 and 0.3 asb) and the visual acuity after dazzling (readaptation time). The particular feature of this visual acuity measurement is, that not, as usual, the size of the letter type is modified, but the contrast. The letter type is the Landolt-C. This Landolt-C is projected on a screen at 3 m distance from the patient by means of a projector. A standardized dazzling lamp is fixed in the screen. (Based on a study in 2,282 test subjects, Aulhorn and Harms [1970] have formulated demands for the four visual acuity measurements.) We have tried the mesoptometer during the past year. The results of the measurements in 100 military drivers are given in table I.

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Table I. Mesoptometer examination in 100 military drivers

Especially the visual acuity during dazzling appears to cause difficulties. The mesopic visual acuity is often insufficient in patients with incipient cataract and especially with incipient macular degeneration.

References

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Discussion

Van Balen: Isn't it difficult to keep the dazzling angle constant in the apparatus shown by you?

Greve: The dazzling angle depends on the fixation of the test person; if he fixates well the dazzling angle is 2° or 3° . The distance test subject-light source (3 m) is constant and measurable. Slight lateral movements of the head have hardly any influence on the dazzling angle.