Visual acuity charts: comparison study


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Background and aim

Introduction
In clinical practice, visual acuity charts are used mainly for optical correction prescribing and detecting of severe impairments. Most of the charts known are good enough for these tasks. But if you want to assess treatment results, to monitor subtle changes, to track age dynamics or to conduct precise scientific experiments, you need the chart, that 1) is precise, 2) provides repeatable and reliable results.

Methods

Procedure
Best corrected visual acuity was assessed twice (test and retest) with three test charts in random order, monocularly and binocularly, at viewing distance 4 m.

Ambient light corresponded to 250 lx, luminance of charts – to 160 Cd/m2.

Results

We compared test and retest data by Wilcoxon signed-rank test. In group 1, the results of test and retest were significantly different for Lea chart (p=0.003), that indicates poor repeatability; for IITP and IITP-V charts no significant differences were found (p=0.611 and p=0.807). In group 2, no significant differences were found for all three charts (p=0.727 - Lea, p=0.340 - IITP, p=0.974 - IITP-V). Thus, according to our data, in group with worse visual acuity, Lea-screener chart show worse repeatability than IITP and IITP-V chart.

The aim of the study was to assess repeatability of Lea-screener chart and new visual acuity charts: with wide-space design (IITP) and with proportional design (IITP-V).

Conclusions

For precise and repeatable visual acuity assessment in children with optical nerve atrophy and retinopathy (bad visual acuity), Lea chart seems to be inappropriate because of bad repeatability.

IITP charts might be better alternative for repeatable testing in medical practice.

References