STATISTICAL EVALUATION IN PEDIATRIC PATIENT OF LANG I STEREO-TEST FOR THE DIAGNOSIS OF MICROESOTROPIA IN DAILY PRACTICE

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The usefulness of diagnostic tests for microesotropia is a mismatching problem till nowadays. We have examined the most common and used test to detect microesotropia in daily practice: Lang I stereo-test. The aim of our study was to analyze statistically this test to detect its real effectiveness in children.

Efficacy considers the extent to which a specific treatment or test produces a beneficial result under ideal conditions, effectiveness refers to the actual effect of a treatment or test in the real world of people who comply poorly.

Stereopsis can be quantified in the seconds of arc of retinal image disparity required to product perception. The minimal disparity the elicits the response is referred to as the stereoacuity. The minimal retinal image disparity in humans that yields the perception of stereopsis is about 14 seconds of arc. Extrafoveal images w ich project into retinal areas with less resolving power that the foveal images, require greater retinal image disparity to perceive stereopsis. Therefore stereoscopic vision is totally unalbe to cope with strabismus. When misalignment exceed the 8 prism diopters stereopsis disappears. Many tests are clinically used in common practice.

The authors founded a specificity of 99% and a sensitivity of 87%. We could also calculate the positive predictive value (93%) and the negative predictive value (99%) of the test since we knew the prevalence of microesotropia in our population. Likelihood ratio was detected to evaluate the efficacy of the tests in daily practice and it corresponds to 87.

Lang I stereotest is a very simple test to define the presence of stereopsis between 550 and 1200 seconds of arc, and it is based on a random dots test. It is commonly used in practice to point out the presence of strabismus in children. The test shows figures of common objects very well known in children’s world. A cat, a star and a car are showed on different planes, the cat appears nearest in respect to the others two, the car is the farest. Usually the answers vary according to the patient’s age and comprehension.

Lang I stereo-test was presented at a distance of 40-50 cm. All underwent a full orthoptic and ophthalmological examination. “Palizza 8 dotpers base-in test” was considered the “gold standard” diagnostic test. The stereo-test was presented at a distance of 40-50 cm. Among all the patients, 281 (90,1%) were considered normal (without strabismus) and 31 (9,90%) were considered affected (with strabismus) at the gold standard test. Among the patients without strabismus the test allowed to detect 279 real negatives (orthotropic with stereopsis) and 2 false positive (orthotropic without stereopsis). Among the patients considered microesotropic 27 where found to be false negatives (microesotropic with stereopsis). We stress the importance to involve children aged more than three years old to have a good reliability of this test in practice to detect microesotropic patients. Younger children don’t allow to collect answers to make the correct diagnosis and should be monitored with other tests with good statistical evaluation according to age.

The results are reported in the following table:

<table>
<thead>
<tr>
<th>RESULTS</th>
<th>POSITIVES</th>
<th>NEGATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>REAL</td>
<td>27</td>
<td>279</td>
</tr>
<tr>
<td>FALSE</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

- **Specificity** = capacity to diagnose normal pts
- **Sensitivity** = capacity to diagnose affected pts
- **Likelihood ratio** = detects the probability to be affected by a disease after being positive to the test itself.
- **Odds** = defines the probability to be affected by the pathology we consider in the study
- **Positive predictive value** = probability to have a microesotropia in case of a positive test
- **Negative predictive value** = probability to have a normal patient in case of a negative test

The cooperation of younger patients was significant for the statistical analysis children younger than three years due to the impossibility to register reliable data. We stress the importance to involve children aged more than three to have a good reliability of this test in practice to detect microesotropic patients. Younger children don’t allow to collect answers to make the correct diagnosis and should be monitored with other tests with good statistical evaluation according to age.

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