These two papers report on the initial diagnosis of strabismus over a ten year period of time in patients less than 19 years of age in Olmstead County, Minnesota. The author of the first paper stated that “virtually all” of the medical care for the approximately 106,000 residents of this county is provided by the Mayo Clinic, the Olmstead Medical Group, or their affiliated institutions. Included in the analysis were all children diagnosed with esotropia of at least 10 prism diopters, exotropia of at least 10 prism diopters, or hypertropia of at least two prism diopters by an ophthalmologist. A total of 627 new cases of strabismus among the county residents were diagnosed during the ten year study period. Of these 627 patients, esotropia was the diagnosis in 60.6%, exotropia in 32.7%, and hypertropia in 6.7%.

The most common types of strabismus, based on their definitions, were accommodative esotropia (27.9%), intermittent exotropia (16.9%), acquired (meaning developed after six months of age) nonaccommodative esotropia (10.2%), abnormal central nervous system esotropia (7.0%), convergence insufficiency (6.4%), congenital esotropia (4.8%), and abnormal central nervous system exotropia (4.8%). The most common form of hypertropia was IVth cranial nerve palsy, found in 2.1% of the patients.

The second of these papers dealt with age of diagnosis of the strabismus. The median age of diagnosis of esotropia was 3.1 years, compared to 7.2 years for exotropia, and 6.1 years for hypertropia. These ages were statistically significantly different (p=0.001). The authors used the age at first diagnosis data to determine incidence rates as a function of age. For the first six years of life, the highest incidence was found for esotropia. Between seven and twelve years of age, exotropia showed the highest incidence. From 13 to 19 years of age, the incidence were similar for esotropia, exotropia, and hypertropia. From one to three years of age, the incidence rates for esotropia were approximately three times those for exotropia. Incidence rates for esotropia declined from three years to seven years. Incidence rates for exotropia remained fairly constant from one year to nine years of age, with the exception of a dip at four years.

Over 95% of the 627 patients in this study were Caucasian, limiting extrapolation of study results to populations with similar racial distribution. Another limitation of the study was that age of diagnosis rather than age of onset was evaluated, with the result that in some cases the true incidence of strabismus may have been significantly earlier than it was diagnosed.


Several studies have reported that bifocal and progressive addition spectacles reduce the rate of childhood myopia progression as compared to single vision spectacles in children with esophoria at near. This paper presents a case report in which 12-year-old identical twin girls, both with myopia and nearpoint esphoria, wore soft contact lenses made of the same
material by the same manufacturer. Twin A wore bifocal contact lenses and Twin B wore single vision contact lenses for 13.7 months. Then both girls wore bifocal contact lenses for an additional 12 months. The add power in the bifocal contact lenses was enough to reduce the eso fixation disparity at near to zero. At the start of this study spherical equivalent cycloplegic autorefraction measurements averaged for the two eyes were -1.56 D for twin A and -1.44 D for twin B.

The amounts of myopia progression (spherical equivalent cycloplegic autorefraction, average of the two eyes) over the first 13.7 months of the study were +0.13 D (decrease in myopia) for twin A who wore the bifocal contact lenses and -1.19 D for twin B who wore single vision soft lenses. In the next 12 months, with both girls wearing bifocal contact lenses, the changes were -0.28 D in twin A and +0.44 D in twin B. The authors noted that with bifocal contact lenses there was little or no progression of myopia at an age when increases in myopia would be expected. They suggested that this result in one pair of twins “argues for further study” of the effectiveness of bifocal contact lenses as a means of slowing myopia progression in esophoric children. They suggested that bifocal contact lenses might be more effective than bifocal spectacles because it is easy for children to look over the add portion of bifocal spectacles.


Methods of testing and recording with many suppression tests have not been standardized. This paper reports an attempt to examine a testing and scoring method for the foveal suppression test on the near Mallett unit. That suppression test consists of five rows of green letters on a black background. The angular subtense of the letters when the unit is held at 36 cm is shown to the left of the lines of letters: 5, 7, 10, 15, and 20 minutes of arc. To perform the suppression test, the letters are read while wearing polaroid goggles. The top three lines contain three letters, the middle letter on each line seen by both eyes (and thus providing a fusion lock) and the others seen monocularly. The bottom two lines each contain six letters, the middle two seen by both eyes and the others seen monocularly. The authors suggested a testing procedure in which the lines were first read under binocular conditions with polaroids in place, then under monocular conditions with the left eye occluded, and lastly under monocular conditions with the right eye occluded. They derived foveal suppression (FS) ratios for each eye by subtracting the number of letters read under binocular conditions from the number of letters read under monocular conditions and then dividing that by the number of letters read under monocular conditions. In that manner they determined the percentage of letters which were suppressed independent of visual acuity, a higher score indicating more foveal suppression. They also determined a total FS score by dividing the total number of letters not read with the polaroid goggles by the numbers of letters that could have been read with polaroids and were read by one eye and then the other during monocular occlusion. (The formula for the right eye FS ratio was (mon RE – bin RE)/mon RE, where mon RE was the number of polarized letters read by the right eye (RE) under monocular conditions and bin RE was the number of polarized letters read with the polaroids in place. A similar formula was used for the left eye. The formula for the total FS ratio was ((mon RE – bin RE) + (mon LE – bin LE))/(mon RE + mon LE), where mon LE and bin LE were defined for the left eye as they were for the right eye.)

They performed this test on 131 subjects recruited in an optometry practice in the United Kingdom. The subjects tested ranged in age from 13 to 88 years and averaged 47 years of age. The near cover test showed ortho on 72.5% of the subjects and a tropia on 3.8%. Of the remaining subjects, 73% showed exophoria and 27% esophoria.

Ninety-five percent of the subjects had an FS score of 33% or less for the right eye and 43% or less for the left eye. The authors thus suggested a total FS score of more than 38% could be considered abnormal. Forty-eight percent of the sample suppressed at least one letter, but only 13% suppressed two or more letters. The authors reported that there were no obvious trends in the distance visual acuities, cover test results, or associated phoria in the subjects with the worst FS scores, but that most of them had a difference between the two eyes in near visual acuity. Spearman correlation coefficients indicated a statistically significant but low correlation (r=0.19) between FS score and associated phoria. The correlation between
FS score and near cover test measurement was not statistically significant.

This study provided a step forward with the suggestion of a means of standardizing testing and recording with a suppression test. However, the authors did acknowledge a number of limitations of the test: small number of letters on each line, unequal legibility of the letters, possible variations in concentration and effort by the subjects, and the possibility of binocular rivalry affecting the results. The authors noted that because the test results did not correlate closely with binocular vision findings and because of the limitations of the test, a high foveal suppression score on this test “does not necessarily indicate that a binocular vision anomaly is present. The FS test results need to be considered in the context of data from other clinical tests.”

---

Free COVD Membership

All Students and Residents receive free membership to COVD for the full four years of their education, plus residency.

Also, new Faculty Memberships to COVD are free for the first year.

For membership applications or more information, visit the COVD website at www.covd.org or call 888-268-3770.

There’s never been a better time to be a COVD member!