Current treatment of amblyopia: where are we?

Tratamento atual da ambliopia: onde estamos?

Galton Carvalho Vasconcelos[1], Marcelo Fernandes da Costa[2,3]

Early on in our training as ophthalmologists, we are taught how to diagnose amblyopia and promptly initiate its treatment. Although such information during the learning process seems to be quite valuable, evidence is lacking for some of the procedures used to treat amblyopia that have been taught to successive generations of ophthalmologists. Nobel laureates Hubel and Wiesel characterized the basic features of this well-known developmental disease, yet the complete pathophysiology is not known, and amblyopia remains one of the most enigmatic and interesting visual developmental diseases[1]. Since the early 1960s, many intriguing aspects of amblyopia have been revealed. Today we know that amblyopia not only causes an anatomic reduction of the cortical ocular dominance columns of the amblyopic eye and a reduction of binocular cells, but also affects visual functions, such as contrast sensitivity, which can be reduced not only in high spatial frequencies but also in medium and low frequencies. Asymmetries in processing nasal-temporal visual stimuli persist in adults with amblyopia, and other capabilities, such as satisfactory alignment and spatial phase detection as well as peripheral vision, are also altered in these individuals[2]. In addition to experimental studies, much has been written about the new multicenter clinical trials known as the Amblyopia Treatment Study (ATS) or more commonly known as the Pediatric Eye Disease Investigator Group (PEDIG), which has markedly influenced the way clinicians understand and treat amblyopia throughout the world, including Brazil. The findings from these clinical trials have already influenced treatment, such as by reducing the number of hours in the treatment of refractive and strabismic amblyopias, advising slow patch tapering at the end of treatment, extending the treatment age beyond 7 years, and several other items related to the medications used to treat amblyopia (e.g., atropine).The value of such studies, performed in collaboration among more than 100 research centers in the United States, Canada, and the United Kingdom, and involving more than 200 pediatric ophthalmologists[3], is due not only to its multicentric characteristic and methodologic rigor, but especially to it daring paradigms in the treatment of strabismus that are in stark contrast with what we learned in our training, such as full-time occlusion and initiating treatment in patients prior to 7 years of age, which were previously considered necessary for improvement. Full-time patching for days or weeks for refractive and strabismic amblyopia, recommended in previous decades, has given way to part-time occlusions of 6 hours, as reported in a recent survey of the members of the American Association for Pediatric Ophthalmology and Strabismus (AAPOS)[4]. In addition to those studies, experimental studies of the effects of occlusion have demonstrated secondary deprivation effects resulting from fixation of the eye and indicate that the occlusion time should not be longer than 6 hours[5]. This trend has also been observed in the ophthalmic community in Brazil, although there is a lack of national clinical evidence.

The ATS PEDIG studies, despite their scientific rigor, require careful reading to identify numerous unanswered questions and methodologic bias, particularly with regard to possible adaptations to the epidemiologic and clinical characteristics of amblyopic patients in various areas around the world. A study performed in a large Canadian city indicated that the PEDIG guidelines are not always implemented or translated into clinical practice in the same way, although there has been a trend toward a reduction in the number of hours of occlusion[6]. The practice of partial occlusion lacks clinical evidence in some aspects of the treatment of deprivation amblyopia, for which, according to the Cochrane Database of Systemic Reviews, there are currently no studies with good evidence[7].

This new accrual of knowledge calls into question the limits of the known pathophysiologic principles, our ability to cope with the changes made by patients, and, perhaps paramount, the need for a new review of the concept, diagnosis, and treatment of this important disease.

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[1] Physician, Children's Low-vision and Strabismus sectors, São Geraldo Hospital, Universidade Federal de Minas Gerais - UFMG, Belo Horizonte (MG), Brazil.
[2] PhD, Setor de Psicofísica Clínica, Department of Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo - USP, São Paulo (SP), Brazil.
[3] Núcleo de Neurociências e Comportamento, Programa de Neurociências Aplicadas, Universidade de São Paulo - USP, São Paulo (SP), Brazil.

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