



Childhood myopia — a global perspective

Paolo Nucci¹

Received: 4 October 2022 / Revised: 4 October 2022 / Accepted: 7 October 2022

© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2022

This issue includes an article by an international group of scholars led by Eedy Mezer, to which I would include the pioneer paper that confirmed the efficacy on a European population of low dose Atropine in controlling myopia progression, namely Sacchi et al., *Acta Ophthalmologica* 2019: “Efficacy of atropine 0.01% for the treatment of childhood myopia in European patients” [1]. It is now well established that excessive close commitment, more demanding schooling, and less time spent outdoors are all relevant elements in the aggravation of school myopia.

Beyond the reasonable public health indications supported by many National Health committees in the critical period of COVID-19, there is no doubt that the imposition of the lockdown on the younger generation has entailed not only an unimaginable psychological burden, but also significant cost in terms of increase of myopic defects.

It is in this perspective that the questionnaire sent and the wide participation of colleagues from all over the world offers an important signal towards the opportunity to have validated therapies and the broadest possible adherence to the strategies available today.

In the late 1980s, when I had recently completed my residency program, the literature was already plethora in terms of strategies, even rather unlikely ones, to avoid the progression of myopic defects. During that time, I began a collaboration with a widely read magazine and in one of the first issues in which I had the opportunity to publish, I prepared an article entitled “*Medicine or Magic*”, which resonated well because it mocked the esoteric practices of biofeedback that promised miracles in the cure of myopia. Years later, I paid the price of my scepticism at the time, and now find myself advocating more and more often with colleagues and patients for recent therapies useful for containing the dramatic increase in the prevalence of myopia in

the younger generation. Times have changed, and no scholar who cares about his/her reputation would support ineffective treatments or without scientific validation.

This article offers me the opportunity to raise questions that still do not have commonly accepted answers and at the same time point out what most researchers in the world demonstrated in terms of developmental and non-developmental myopia therapy. None of the things you will read lacks well-published confirmations.

Is myopia curable?

It is not correct to speak of the treatment of a refractive defect. What we have been trying to do for some time in myopic young people is to keep the evolution of the defect under control. It is known that the most common form of myopia, the one defined as “school myopia”, begins after early childhood and progresses with growth to generally stabilize upon completion of secondary school, although in many cases it can continue to grow until the end of university studies. Low dose atropine in the prepubertal period and peripheral defocus lenses up to the 18th year of life are currently strategies with supporting scientific literature. In Mezer’s paper, you will find a part of what now is published in peer reviewed journals.

Do these therapies have any side effects?

Indeed, the cases in which the very low dosage of atropine can cause difficulties in focusing and dilating the pupils are very rare, and when present are totally reversible and without consequences. In fact, there are a very small number of patients who are much more susceptible and in these cases the suspension of treatment guarantees the complete reversibility of the discomfort manifested. Even defocus lenses can in some cases create a little discomfort in the peripheral areas of the visual field, to which we adapt largely in a short

✉ Paolo Nucci
paolo.nucci@unimi.it

¹ Department of Biomedical, Surgical and Dental Sciences, Università Di Milano, Via San Vittore 12, 20123 Milan, Italy

time. This in any case does not affect vision in the central 15° which are the ones we mainly use.

Why does not everyone adhere to these strategies?

The doctor is a constitutional sceptic, and this is an important guarantee for the patient. Nonetheless, when the literature is overwhelming, the most conservative must also accept treatment even if the mechanisms are not fully clarified. This is the reason why a negative attitude is today little justified and largely due to a lack of knowledge of literature.

Does it work in all patients and how much?

Actually, responders for both approaches do not represent 100% of the subjects who undertake the treatment. There are a percentage of patients in which the defect continues to progress which is around 30%. Furthermore, the defect is not totally controlled. On average if a patient has an annual worsening of -0.75/-1 diopter, the evolution will be around 0.25 diopters.

Is it better to use a single therapy or is the combined intervention more effective?

In truth, although the mechanisms of action of both approaches are not fully known, they should act on different mechanisms, and this makes it reasonable to think that combined use may lead to greater effectiveness.

From this perspective, a study like the one proposed must be encouraged because it increases awareness and greater involvement of ophthalmologists around the world.

Reference

1. Sacchi M, Serafino M, Villani E, Tagliabue E, Luccarelli S, Bon-signore F, Nucci P (2019) Efficacy of atropine 0.01% for the treatment of childhood myopia in European patients. *Acta Ophthalmol* 97:e1136–e1140

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.