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Letter to the editor

Ocular injuries by less-lethal weapon: a view from Switzerland

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Dear Editor-in-chief:

Thank you for focussing on this troubling subject in your issue 1/2024. It confirms that many of the difficulties involved are similar worldwide. Countries that use less-lethal weapons include Switzerland, the only Western European democracy besides France to employ multiple kinetic impact projectiles. Our rubber scattershot is comparatively small and light but has led to an uninterrupted series of severe eye injuries since 1980. Legal authorities have long questioned whether these were due to rubber ammunition, though ophthalmologists always knew what was going on. Communication channels were non-existent, and monitoring remains a challenge. Please see my recent open-access review in Eye (Fierz, 2024) for details.

I would like to add the odd point to your commendable editorial (Pérez-Sales et al., 2024). The common denominator is that eye injuries require eye doctors.

In the introduction to Section 4, you list different professionals who should be involved in assessing an ocular injury and conclude by stating that it is unnecessary to have all of them available. While I agree, it is my considered opinion that an ophthalmological evaluation is mandatory. Ideally, it should be commissioned by and transmitted to the legal experts in a similar time frame as the forensic report. (To the best of my knowledge, this is not the case in Switzerland, where prosecutors may rely on forensic evidence alone. I am unaware of the situation elsewhere.) The patient should not have to foot the bill.

Forensic specialists admit that they are unable to interpret comparatively simple ophthalmological findings such as traumatic cataracts without the help of eye doctors (Moreschi, 2013). They cannot be expected to understand the unique vulnerability of the eye to trauma. Eye injuries by kinetic impact projectiles are among the most severe and complex examples of ocular trauma seen in otherwise peaceful countries. Also, forensic specialists usually collaborate closely with prosecutors, which raises the question of bias. I have seen a recent forensic report that did not only ignore the main ophthalmological finding, but explicitly denied it. Due to ongoing legal proceedings, I cannot go into more detail. While it was probably unintentional, I would never have believed such a glaring error could happen here.

Damage thresholds for the eye are lower than for any other organ. Since even the foam dart of a Nerf toy gun may cause permanent visual impairment (Cohen, 2023), any projectile must pose a risk to the eye. Therefore, regulations should prohibit hitting the head. While the kinetic energies of single projectiles are usually higher, multiple projectiles are responsible for the vast majority of reported eye injuries because of their inherent lack of precision. The UN Special Rapporteur on Torture has called for multiple projectiles to be outlawed (Edwards, 2024). In several countries, ophthalmologists and sometimes even their professional associations have gone public about the dangers of kinetic impact projectiles: not only in the States, Chile and France (Fierz, 2024) but also in countries where doing so might be risky, like Iran (Afkhamnejad, 2023), and most recently in Bangladesh (Dhaka Tribune, 2024). I take my hat off to all my colleagues who had and still have the courage to speak up. In my opinion, this is very much a part of our professional responsibilities.

It is interesting to me that the most outspoken civic movements against these weapons - Stop Balas de Goma in Spain and MOCAO in Colombia - developed in countries from which I could find no ophthalmological publications.

In Section 4.3 on the assessment of ocular damage, it is worth mentioning existing classifications such as the Birmingham Eye Trauma Terminology (BETT) (Kuhn, 2002a) or the Ocular Trauma Score (OTS) (Kuhn 2002b). In particular, I missed a mention of traumatic optic neuropathy and post-traumatic secondary glaucoma. Both conditions can lead to blindness. Traumatic optic neuropathy usually develops rapidly. Glaucoma also harms the optic nerve, but its onset is more insidious, and it may not occur until years or even decades later. Affected patients normally do not notice visual field loss until it becomes immediately vision-threatening. Any damage to the optic nerve is irreversible. Normal ageing alone takes a toll on optic nerve fibres, which may be enough to cause sight-threatening progression in persons who are diagnosed late, i.e. with preserved central vision and good visual acuity but advanced field loss.

Therefore, every patient with a significant eye injury needs lifelong ophthalmological follow-up examinations. This even holds true for those with a completely blind eye, as glaucoma can be painful. Also, checking on the health of the only sighted eye becomes even more important. Counselling patients accordingly is vital. In my limited experience, some are lost to

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follow-up despite our best efforts. Sadly, these may be among the most traumatised—for obvious reasons.

There appears to be a global unmet need both for resources for medics/first responders and for standards for collecting data on such injuries (personal communication from Neil Corney, Omega Research Foundation, October 2024). Efforts among the international ophthalmological community are underway. Still, several series of such injuries have not been reported in the ophthalmological literature, perhaps because it is too difficult or dangerous. Anyone with experience in these matters or with good ideas is welcome to contact me or the staff at Omega. Thank you!

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