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Transient loss of vision on a high-speed train

Omer Trivizki and Anat Loewenstein
Tel-Aviv Medical Center, Israel

A 60-year-old patient with a past ocular history of retinal detachment that was treated by vitrectomy with C3F8 gas and cataract surgery arrived at his follow-up examination 10 days later for a routine check up. The examination revealed that the eye was 80% full of gas and that the retina was attached. The patient works in Spain and explained that he needed to return to work immediately or lose his job. He was told to avoid flying, but was approved sailing to Spain which he did. He arrived safely and started to work in Umbria, in the south of Spain. Two weeks later, he called our department while riding in a fast train to Madrid and complained of a sudden and complete loss of vision. We found out that Madrid is located 800 meters higher in altitude than Umbria, where he used to work, and that the train's speed is extremely high. We concluded that although we limit an elevation in altitude to 1,000 meters for patients who undergo vitrectomy with gas, due to the very high speed of arriving at the otherwise acceptable altitude, the gas had apparently spread and caused a blockage in the central retinal artery. The patient had telephoned us for assistance after 20 minutes of complete visual loss, including no light perception. Alighting from the train was not an option, so we directed him to lower his head and use two fingers to press his eye for a few seconds and then rapidly withdraw them. He reported that his eyesight was already partially returning after one try, so we instructed him to repeat that maneuver every 1-2 minutes for 10 minutes until his eyesight was fully restored. He arrived in Madrid 40 minutes later and was examined at the ophthalmology department of the University of Alcalá de Henares Hospital. His intraocular pressure was 20, his eye was about 50% full of gas and the retina was attached. Apparently, this phenomenon is not unknown. Shiramizu et al had described a 17-year-old boy who had undergone a vitrectomy and gas injection and suffered from temporary vision loss while traveling on the bullet train in Japan. In response to that report, Lincoff wrote that it is safe to fly on an airplane in terms of the spreading of gas and the rise in intraocular pressure if the gas altitude is 4 disc diameters above the the patient disc which is equivalent to 10% of gas. We conclude that intraocular gas may spread as a result of very rapid elevation of any kind, not only while flying in an airplane. Secondly, it might be possible to successfully lower the pressure by an application of strong pressure and rapid release maneuver.

omertr@gmail.com