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Case Report

Valsalva retinopathy in a young healthy individual

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Introduction

The Valsalva manoeuvre is the forced exhalation against a closed glottis. First described by an Italian anatomist in 17th century Antonio Maria Valsalva, it is now a well known entity amongst medical practitioners. It is not an innocuous manoeuvre as it appears to be. It leads to increased intra thoracic and intra abdominal pressure and raised central venous pressure. There are no valves in the venous system rostral to the heart hence a rise in the reflux venous pressure occurs in the head and neck region of the body. Preretinal haemorrhage caused by this sudden rise in venous pressure was first termed as Valsalva haemorrhagic retinopathy by Duane TD in 1972.¹ Valsalva retinopathy is a rather common occurrence but its recurrence is infrequent. A case of recurrent Valsalva retinopathy in a young healthy individual which occurred following a bout of vomiting after a gap of 4 years is described. Valsalva manoeuvre like stress is a part of day to day life. This case is unique because young individuals can

generate sufficiently high reflux venous pressure which can lead to rupture of capillaries. It is important to be aware of this condition not only for correct diagnosis and management but also to prevent its recurrence in future.

Case report

A 30 years old male patient presented with a sudden onset painless diminution of vision in the left eye following a bout of vomiting 7 h before at 0500 hrs in the morning. There was no history of trauma, redness, flashes, floaters or transient visual loss in the past. He gave history of having a similar episode, 4 years back in the same eye following a bout of vomiting. He was diagnosed to have subhyaloid haemorrhage. All investigations including Fundus Fluorescein Angiography (FFA) were normal. He had full visual recovery with conservative management. He did not give any history of a systemic disorder. Ophthalmic evaluation revealed vision in right eye was 6/6 and left eye was 6/36. Anterior segment examination in both eyes was unremarkable. There was no afferent pupillary defect. Fundus examination in right eye was normal. Left eye showed disc was normal. Blood vessels were normal. A large circumscribed area of preretinal haemorrhage about 4 disc diameters (DD) in size was seen in the superotemporal quadrant involving upper part of macula reaching upto fovea (Fig. 1). There were no retinal holes, tears, detachment, perivascular sheathing or snow banking at pars plana. There were no microaneurysms, hard exudates, soft exudates or neovascularisation. Amsler's grid showed a relative central scotoma with metamorphopsia. Colour fundus photography and FFA were performed. FFA did not reveal any leakage. All investigations including complete blood counts, clotting

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parameters, biochemical parameters such as urea, creatinine and glucose were within normal limits. Systemic evaluation was carried out by the physician and no abnormality was detected. He was diagnosed as Valsalva retinopathy. The patient was followed up on conservative management he showed marked improvement. The haemorrhage resolved over a period of 6 weeks and patient had a complete visual recovery.

Discussion

Valsalva retinopathy was first described by Duane¹ in 1972 for preretinal haemorrhages occurring as a result of sudden rise in venous pressure as seen in Valsalva manoeuvre. It is an uncommon condition and has been reported to occur with various forms of Valsalva stress such as weight lifting,² physical exercise,³ balloon blowing,⁴ birth labour⁵ etc. The present case developed Valsalva retinopathy following a bout of emesis. Valsalva retinopathy is typically seen in young males. Ophthalmologic examination reveals either a circular or a bilobed haemorrhage⁶ which sometimes has a fluid level associated with it. The location can be subinternal limiting membrane (ILM) or subhyaloid. Patients with this condition are usually healthy and develop sudden visual loss when their intra thoracic or intra abdominal pressure increases suddenly such as in weight lifting, vomiting, labour etc. So a careful history taking in such cases can clinch the diagnosis. Duane¹ first postulated the mechanisms for retinopathies due to distal trauma as alteration in arterial circulation (forward retinopathy), venous circulation (backward retinopathy) or to changes occurring in both systems (mixed retinopathy). Valsalva retinopathy falls in the second category. There are no valves in the venous system rostral to the heart. The sudden increase in the central venous pressure due to Valsalva stress is transmitted right upto the perifoveal capillaries which may rupture leading to preretinal haemorrhage at macula. In the present case one of the superior perifoveal capillaries appeared to have ruptured as the haemorrhage was located superior to fovea. Although Valsalva retinopathy often leads

to large preretinal haemorrhages and an alarming picture the prognosis remains good and vision usually returns to normal, so the treatment usually remains conservative which was followed in the present case. However NdYAG laser has been used by some workers to puncture the posterior hyaloids and drain the blood into vitreous cavity.⁷ The use of NdYAG laser in such a self resolving condition with good visual prognosis is debatable as it can lead to macular hole, retinal detachment and epiretinal membrane⁸ (ERM).

The present case developed a recurrent episode of Valsalva retinopathy after 4 years. A case of recurrent Valsalva retinopathy has also been reported by Jung et al⁹ in which recurrence occurred at 3 weeks due to a similar Valsalva stress while exercising a barbell. Kim et al¹⁰ reported a case of bilateral Valsalva retinopathy in which there was bilateral recurrence after 9 months of previous episode. Literature search did not reveal any other reported instance of recurrent Valsalva retinopathy and our case appears to be only the third such case. Our case is unique because recurrence occurred after a gap of 4 years which is the longest gap after which a recurrence has occurred. Being a recurrent case a thorough evaluation was carried out to rule out an underlying cause which could not be detected. It becomes important in all cases to prevent any further recurrence by preventing any condition leading to Valsalva like stress and the patient has to be counselled accordingly.

Valsalva retinopathy occurs as a result of sudden rise in intra thoracic or intra abdominal pressure as in Valsalva manoeuvre. It has to be kept in mind in young individuals presenting with sudden diminution of vision. A careful history is the key to the diagnosis. The prognosis is good and patient needs to be counselled to avoid any such Valsalva manoeuvre like stress to prevent recurrence in future.

Conflicts of interest

All authors have none to declare.

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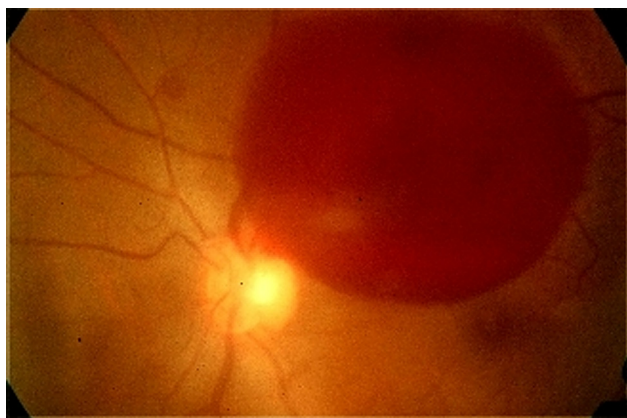


Fig. 1 – Fundus picture of left eye showing a large circumscribed area of preretinal haemorrhage about 4 DD in size in the superotemporal quadrant involving upper part of macula reaching upto fovea.

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Journal Scan

G. Terrin, A. Passariello, M. De Curtis, et al., Ranitidine is associated with infections, necrotizing enterocolitis, and fatal outcome in preterm/VLBW newborns. *Pediatrics* 129 (2012) e40–e45.

There are no clear benefits of acid blockers in neonates, particularly in preterm neonates but they continue to be used as prophylaxis or therapy of stress ulcers and gastroesophageal reflux disease (GERD) because of their perceived safety and potential benefit among many subspecialists caring for neonates. Multiple studies show that these drugs facilitate the onset of infections in adults and children. Similar observational studies have reported an association between the use of H2-blockers and neonatal sepsis and/or NEC. This makes sense as gastric acid is a major non-immunologic defense against ingested pathogens, and inhibition of gastric acid can allow pathogenic bacteria to proliferate in the gastrointestinal tract leading to bacteremia and infection. Terrin et al conducted a prospective cohort study to determine whether there was an increased risk of infectious diseases, NEC, and mortality in preterm newborns exposed to ranitidine treatment. Unique to most cohort studies, a prospective sample size calculation was done, lending additional credibility to this study. The primary outcome was the rate of infectious diseases. Secondary outcomes included NEC, death, and length of hospital stay. The study included 274 VLBW infants with birth weight between 401 and 1500 g or gestational age between 24 and 32 weeks. In this population, 91 infants were given ranitidine and 183 did not receive it. The patient characteristics between the group exposed to ranitidine and the unexposed group are similar

with regards to important risk factors for infection and NEC, including birth weight, gestational age, sex, Apgar scores, CRIB scores, persistent ductus arteriosus, duration of endotracheal intubation, and central vascular access duration. Many of these potentially confounding risk factors have not been accounted for in previous studies. Thirty-four (37.4%) of the 91 children exposed to ranitidine and 18 (9.8%) of the 183 not exposed to ranitidine had contracted infections (OR = 5.5, 95% CI, 2.9–10.4, $P < .001$). The risk of NEC was 6.6-fold higher in ranitidine-treated VLBW infants (95% CI, 1.7–25.0, $P = .003$) than in control subjects. Mortality rate was significantly higher in newborns receiving ranitidine (9.9% vs 1.6%, $P = .003$). The authors concluded that ranitidine therapy was associated with an increased risk of infections, NEC, and fatal outcome in VLBW infants. The results from this prospective study provides the most useful and current information regarding the potential risks of H2-blocker use in preterm neonates, and they should be used with care in this population.

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