CASE REPORT

Simultaneous Bilateral Non-Arteritic Anterior Ischaemic Optic Neuropathy and Unilateral Central Retinal Artery Occlusion after Hip Prosthesis Surgery

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ABSTRACT

Non-arteritic anterior ischaemic optic neuropathy (NAION) results from the ischaemia of the anterior part of the optic nerve. Postoperative NAION is especially related to spinal surgeries, cardiovascular surgeries, and head-neck surgical procedures. This paper reports a rare case with simultaneous bilateral NAION and unilateral central retinal artery occlusion after hip prosthesis surgery. A 63-year-old woman had sudden visual loss in both eyes after hip prosthesis surgery. Fundus examination revealed bilateral optic disc oedema and macular paleness, and dot-blot haemorrhage around the optic disc suggesting central retinal artery occlusion in the left eye. Sudden simultaneous loss of vision may appear after non-ocular surgical procedures. In this case, anaemia due to excessive blood loss and prolonged hypotension during hip prosthesis surgery was the probable cause of anterior ischaemic optic neuropathy and unilateral central retinal artery occlusion.

Keywords: Anterior ischaemic optic neuropathy, hip prosthesis surgery, perioperative bilateral vision loss

INTRODUCTION

Non-arteritic anterior ischaemic optic neuropathy (NAION) results from the ischaemia of the anterior part of the optic nerve. Patients typically complain about sudden painless vision loss. In unilateral conditions, relative afferent pupillary defect occurs in the affected eye. Pupillary light reflexes may be absent if the condition is bilateral. Oedema and hyperaemia may occur around the optic nerve. Unilateral NAION is a common disease particularly associated with old age, systemic hypertension, and diabetes mellitus. However, bilaterality is uncommon and is usually related to non-ocular surgeries.

Non-ocular surgical procedures related to postoperative NAION are spinal surgeries, cardiovascular surgeries, and head-neck surgeries, including bilateral radical neck dissection.^{1–8} Routine orthopaedic surgery is also a rare cause of bilateral NAION.⁹

Established risk factors are prolonged hypotensive surgery, prone position, acute anaemia due to excessive haemorrhage, and excessive crystalloid liquid replacement.^{1,7,8}

As far as we know, this is the first report showing simultaneous bilateral NAION and unilateral central retinal artery occlusion after routine hip prosthesis surgery.

CASE REPORT

A 63-year-old woman was referred to our eye clinic with sudden visual loss after hip prosthesis surgery. She stated that she lost half of the vision in the left eye immediately after surgery. Finally, she lost complete vision in both eyes by hours. The patient had a history of diabetes mellitus for 10 years and hypertension for 16 years. She had hip prosthesis surgery in supine

FIGURE 1 Optic disc oedema in the right eye.

FIGURE 2 Optic disc oedema and central retinal artery occlusion in the left eye.

position lasting 2 hours and she had hypotension during surgery. Preoperative haemoglobin (HGB) value was 12.6 g/dL and haematocrit (HCT) was 40.2%. At the time of ophthalmic examination, HGB was 7.8 g/dL and HCT was 22.8%.

The pupils were not reactive. A 1.5 mm anisocoria was present, with 8 mm pupil size in the right eye and 6.5 mm in the left eye. There was no light perception in both eyes. Iatrogenic pupil dilation was eliminated by questioning the patient about eye drops used before.

Intraocular pressure was 17 mm Hg in the right eye and 18 mm Hg in the left eye. Biomicroscopic examination was normal. Fundus examination exhibited bilateral optic disc oedema and pale macula concordant with central retinal artery occlusion, and dot-blot haemorrhage around the optic disc in the left eye (Figures 1 and 2). While performing fluorescein angiography the patient got worse and only colour fundus images could be taken. The patient consulted with the neurology department because of bilateral optic disc oedema. Neurologic examination revealed no pathological findings. Magnetic resonance imaging

FIGURE 3 The patient's normal cranial CT imaging.

(MRI) could not be done because of the metal prosthesis of the patient. Cranial computerised tomography (CT) taken at intervals of 2 days were normal (Figure 3). According to these findings the patient was considered as bilateral NAION and left central retinal artery occlusion. Since the patient had vision loss for 4 days, hyperbaric oxygen therapy was not recommended. Intravenous 300 mL mannitol therapy was applied and the patient was consulted by internal medicine in order to treat anaemia. Systemic steroid treatment was not administered because of normal sedimentation rate. Visual prognosis of the patient could not be followed up because of her discontinuing the visits.

DISCUSSION

Spinal surgeries, cardiovascular surgeries, and head-neck surgeries including bilateral radical neck dissection are the leading causes of bilateral sudden vision loss.¹⁻⁶ The other rare causes are abdominal, orthopaedic, and prostatic surgeries.^{1,4,6,7} The common point of these cases is mostly bilateral sudden painless vision loss in minutes and hours immediately after the surgery resulting from non-arteritic anterior or posterior ischaemic optic neuropathy.¹⁻⁷ Visual prognosis of ischaemic optic neuropathy after non-ocular surgeries is very poor.^{1,8}

In 2005, Lee *et al.*⁴ reported 131 cases with sudden visual loss after surgeries and retrospectively analysed the distribution of the surgeries performed. Ninety-five of these cases had spinal surgery, 12 had cardiac surgery, 6 had major vascular surgery, 5 had major orthopaedic surgery, and 13 had mixed surgery.

Newman⁸ determined several risk factors for bilateral sudden visual loss after non-ocular surgeries

in his literature review, including diabetes mellitus, systemic hypertension, hypotension during surgery, acute anaemia due to excessive blood loss, excessive liquid replacement, vasoconstrictive agents, and supine position during surgery.

In our case, several risk factors were present for the development of NAION. She had type 2 diabetes mellitus and systemic hypertension. The hip prosthesis surgery was performed in prone position. Moreover, it was obvious that excessive blood loss developed during surgery and haematocrit value decreased from 40.2% to 22.8%. Anaemia due to excessive blood loss and prolonged hypotension during hip prosthesis surgery may increase the risk of anterior ischaemic optic neuropathy.

The aim of this case report is to emphasise that such complications can occur after surgeries with excessive blood loss, especially in diabetic and hypertensive patients. To avoid this rare but potentially blinding complication, the surgeon must be provident for replacement of blood in hip prosthesis surgery, in particular with diabetic and hypertensive patients. Duration of hypotension in surgery should be minimised, and whole blood should be replaced instead of crystalloid liquid in case of excessive blood loss. Surgeons and patients should be aware of this complication in these types of surgery.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Note: Figures 1 and 2 of this article is available in colour online at <http://informahealthcare.com/oph>.

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