



Total Intravenous Anesthesia Combined with Peribulbar Block in Vitrectomy Operation with Heart Disorder

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ABSTRACT

Introduction: Vitrectomy is eye surgery to evaluate the retina by removing the vitreous gel which is principally carried out in three stages, namely retinal detachment repair, membrane peeling, and crystalline lens. In this operation, the anesthetic technique that needs to be emphasized is not increasing intraocular pressure and avoiding the oculocardiac reflex. This operation can be performed with a peribulbar or retrobulbar block, however, total intravenous anesthesia may also be considered in patients with other comorbidities.

Case Presentation: Male, 55 years old, 96 kgs, with the chief complaint of blurred vision in the last 3 weeks ago. There were no other complaints but the patient has a history of hypertension, diabetes mellitus type II, congestive heart failure with a history of mitral valve replacement (MVR), and permanent pacemaker (PPM) usage from 2015. The patient had a history of warfarin and novamox usage 7 days ago. From the physical examination, there was no abnormality. There was also no abnormality in laboratory findings. But we found cardiomegaly and aorta elongation in the chest x-ray and atrial fibrillation in the ECG. From the exam, the patient was diagnosed with ablatio retina + post-MVR and scheduled to have a vitrectomy. The patient was positioned supine with 30° head up. The patient was given 3 liters of oxygen via nasal cannula, premedicated with fentanyl 50 mcg, then induced with propofol 100 mg bolus intravenously until sleep nonapnea before continuing with continuous propofol via syringe pump. The patient was maintained by propofol 0.5 mg/kg BW/hour. Next, the patient was given a peribulbar block with 2mL Lidocaine 2% and 2mL Bupivacaine 0.5%. During operation, there was no significant hemodynamic fluctuation until finished. Nonetheless, the patient was fully awake before being transported and then monitored in the recovery room for 2 hours.

Conclusion: The patient thus will undergo vitrectomy can be performed with peripheral nerve blocks such as retrobulbar anesthesia or peribulbar anesthesia. However, after knowing about the patient's medical history, in this case, with a history of cardiac events and also undergone open-heart surgery, total intravenous anesthesia combined with a peribulbar block was considered the most suitable technique.

Keywords: Vitrectomy, Total Intravenous, Heart Disorder, Peribulbar



Kombinasi Anestesi Intravena Total dengan Blok Peribulbar dalam Operasi Vitrektomi pada Pasien dengan Penyakit Jantung

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ABSTRACT

Pendahuluan: Vitrektomi adalah operasi mata untuk mengevaluasi bagian retina dengan menghilangkan gel vitreous yang pada prinsipnya dilakukan dengan tiga tahapan yaitu retinal detachment repair, membrane peeling, dan crystalline lens. Pada prinsipnya teknik anestesi yang perlu ditekankan adalah tidak meningkatkan tekanan intraokuler serta menghindari refleks okulokardiak. Operasi ini dapat dilakukan dengan blok peribulbar maupun retrobulbar, namun pada pasien dengan penyakit penyerta lainnya dapat pula dipertimbangkan anestesi umum.

Presentasi Kasus: Laki-laki, 55 tahun, berat badan 96 kg, dengan keluhan utama penglihatan kabur sejak 3 minggu yang lalu. Tidak ada keluhan lain. Namun pasien memiliki riwayat hipertensi, diabetes mellitus tipe II, gagal jantung kongestif dengan riwayat mitral valve replacement (MVR) dan penggunaan permanent pacemaker (PPM) sejak tahun 2015. Pasien memiliki riwayat penggunaan warfarin dan novamox 7 hari yang lalu.

Dari pemeriksaan fisik tidak ada kelainan. Juga tidak ada kelainan pada temuan laboratorium. Tapi kami menemukan kardiomegali dan elongasi aorta di rontgen dada dan fibrilasi atrium di EKG. Dari pemeriksaan tersebut, pasien didiagnosis ablasi retina + post MVR dan dijadwalkan untuk dilakukan vitrektomi.

Pasien diposisikan terlentang dengan head-up 30°. Pasien diberikan oksigen 3 liter melalui kanula hidung, premedikasi dengan fentanil 50 mcg, kemudian diinduksi dengan propofol 100 mg bolus secara intravena sampai sleep nonapnea sebelum dilanjutkan dengan propofol kontinyu melalui syringe pump. Pasien dipertahankan dengan propofol 0,5 mg/kg BB/jam. Selanjutnya pasien diberikan peribulbar block dengan 2mL Lidokain 2% dan 2mL Bupivakain 0.5%. Selama operasi, tidak ada fluktuasi hemodinamik yang signifikan sampai selesai. Meski demikian, pasien dalam keadaan sadar sepenuhnya sebelum ditransfer dan kemudian dipantau di ruang pemulihan selama 2 jam.

Kesimpulan: Pasien yang akan menjalani vitrektomi dapat dilakukan dengan blok saraf perifer seperti anestesi retrobulbar atau anestesi peribulbar. Namun, setelah mengetahui riwayat kesehatan pasien, dalam hal ini, dengan riwayat penyakit jantung dan juga telah menjalani operasi jantung, total intravena anestesi kombinasi blok peribulbar dianggap sebagai teknik pembiusan terbaik.

Kata kunci: Vitrektomi, Anestesi Umum, Penyakit Jantung, Peribulbar

INTRODUCTION

Vitreotomy is a surgical technique that aims to remove the vitreous body (the clear gel that fills the eyeball). The operator inserts a small tube (cannula) into the eye through a scleral incision or eye wall. This is intended to relieve the traction that the vitreous exerts on the retina.¹ In the past, general anesthesia was used more frequently in vitrectomy, but now local anesthetic techniques are increasing in popularity. The ideal anesthetic technique is to be pain-free postoperatively with no systemic or local complications. In addition, it must have a low cost and be easy to do.² Each anesthetic technique has its drawbacks. General anesthesia techniques are time-consuming, expensive, and have the risk of complications during and after surgery, while local anesthetic techniques are not effective in reducing the incidence of postoperative pain and brainstem anesthesia and death have also been reported.^{2,3} This combined anesthetic technique can reduce the amount of postoperative analgesia, reduce postoperative pain and reduce the incidence of reflex oculocardiac.^{3,4} This operation can be performed with a peribulbar or retrobulbar block, however, total intravenous anesthesia may also be considered in patients with other comorbidities.

CASE

Male, 55 years old, 96 kg with the chief complaint of blurred vision in the last 3 weeks ago. There were no other complaints but the patient has a history of hypertension, diabetes mellitus type II, congestive heart failure with a history of mitral valve replacement (MVR), and permanent pacemaker (PPM) usage from 2015. The patient history of warfarin and novamox usage 7 days ago. From the physical examination, there was no abnormality. There was also no abnormality in laboratory findings. But we found cardiomegaly and aorta elongation in the chest x-ray and atrial fibrillation in the ECG. From the exam, the patient was diagnosed with ablatio retina + post-MVR and scheduled to have a vitrectomy. The patient was positioned supine with 300 heads up. The patient was given 3 liters of oxygen via nasal cannula, premedicated with fentanyl 50 mcg, then induced with propofol 100 mg bolus intravenously until sleep nonapnea before

continuing with continuous propofol via syringe pump. The patient was maintained by propofol 0.5 mg/kg BW/hour. Next, the patient was given a peribulbar block with 2mL Lidocaine 2% and 2mL Bupivacaine 0.5%. During operation, there was no significant hemodynamic fluctuation until finished. Nonetheless, the patient was fully awake before being transported and then monitored in the recovery room for 2 hours.

DISCUSSION

Vitreous humor is a transparent gel-like structure that plays a role in maintaining the transparency and structure of the eyeball. Ablatio retina separates the retinal photoreceptor layer and the retinal epithelial layer below. Ablatio retina happens in 67% of people with myopia. Ablatio retina also happens in people with cataract surgery history and blunt trauma in the eye. Patients with ablatio retina may present with a history of photopsia. The patient also presents with visual field loss, which usually starts in the periphery, and then moves to the central. The physical examination could be done with the funduscopy examination that may present with an ablatio retina if the eye was moving. A radiological examination can be done to support the diagnosis. Management of ablatio retina is by vitrectomy to lift the material that causes traction, subretinal internal liquid drainage, and injection of air or gasses to maintain retinal position.⁵ In this case, we received a 55-year-old male patient who was diagnosed with ablatio retina + post-MVR. This patient also has a history of hypertension and diabetes mellitus and the use of anticoagulants (warfarin). Diabetic retinopathy (DR) is a retinal disorder in patients with diabetes mellitus and one of the leading causes of blindness in the Western world, particularly among working-age individuals. The incidence of DR increased along with the duration of the disease. Along with blood sugar control, invasive procedures such as laser photocoagulation, anti-VEGF injection, or surgery like vitrectomy may be needed.⁶ After being diagnosed, the patient underwent vitrectomy surgery with the anesthetic technique used was combination anesthesia, namely: total intravenous anesthesia with peribulbar block. The majority of anesthetic

techniques in vitrectomy are performed under local anesthesia such as peribulbar blocks, retrobulbar blocks, and subtenon blocks. Technique general anesthesia is performed on patients who cannot coordinate.⁷ The use of combination anesthetic techniques in eye surgery has been carried out in various studies. This combined anesthetic technique was also found to be more advantageous than vitrectomy surgery with only one anesthetic technique.⁸ There are no guidelines for perioperative cardiovascular evaluations for patients undergoing low-risk surgeries, such as vitrectomy. Although a pre-existing cardiac disease is considered a significant risk factor for perioperative complications, there is no recommendation for perioperative monitoring in patients who are asymptomatic with LV diastolic dysfunction and ischemic heart disease. However, in light of the result of the present cases, perioperative cardiovascular evaluations and monitoring are needed even for patients undergoing hemodynamically stable surgeries with relatively short operation times, such as vitrectomy.⁷ Block anesthetic techniques and local anesthetics have relatively mild cardiovascular or pulmonary side effects when compared to general anesthesia. The advantages of regional anesthesia over general anesthesia include better antiinflammatory effects (lower stress response) and lower cardiopulmonary effects. Therefore, if surgery can be performed under regional anesthesia, regional anesthesia is the main choice for patients with heart disease. In this patient, it was decided to perform vitrectomy under peribulbar block anesthesia combined with total intravenous anesthesia. Peribulbar block technique on the patient was found to be successful in maintaining hemodynamic stability during surgery, indicating minimal cardiovascular depression and adequate analgesic effect. The success of this technique is also characterized by a low postoperative pain scale and minimizes the side effects that often appear after general anesthesia in eye surgery such as postoperative nausea and vomiting.⁹

CONCLUSION

The patient thus will undergo vitrectomy can

be performed with peripheral nerve blocks such as retrobulbar anesthesia or peribulbar anesthesia. However, after knowing about the patient's medical history, in this case, with a history of cardiac events and also underwent open-heart surgery, total intravenous anesthesia combined with a peribulbar block is considered the most suitable technique.

DISCLOSURE STATEMENT

The authors have no conflicts of interest to declare

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