

Peribulbar Block and Brainstem Anesthesia: An Unexpected Complication

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Peribulbar block is given by injecting local anesthetic injection in orbicularis oculi muscle during ophthalmic surgeries for providing anesthesia, akinesia and analgesia of the eyeball. Peribulbar block (PBB) is considered a safe block when compared to retrobulbar block (RBB) because of less chance (0.006%) of complications which include retrobulbar hemorrhage, eye perforation and optic nerve injury [1]. However, sometimes-dreadful complications like brain stem anesthesia with this block have been reported [2,3].

A 65 year old male patient, ASA grade II, controlled chronic obstructive pulmonary disorder, posted for cataract surgery, was given peribulbar block using 6 ml of 2% lidocaine and 4 ml of 0.5% bupivacaine with hyaluronidase. The block was achieved without any resistance and negative aspiration was done for fluid or blood. Following the block, patient suddenly became restless, agitated, with feeble pulses, with sudden bradycardia (35-42 bpm) and hypotension (MAP<50 mm Hg), with fall in peripheral oxygen saturation which progressed to loss of consciousness. The patient was given a bolus of atropine 0.6 mg along with I/V fluids. Patient was immediately bag mask ventilated with oxygen @ 10 L/min followed by intubation and mechanical ventilation for 45 min with 100% oxygen. During this period, his saturation was maintained and vitals remained stable. As soon he regained consciousness and followed commands, he was extubated and transferred to the intensive care unit for further follow-up and monitoring. He was further investigated for possible causes and all investigations were found to be normal. He was discharged after 24 h of close observation.

On reviewing the literature, the cause could have been attributed due to an inadvertent injection of local anesthetic agent into brainstem. As the ophthalmic vessels are quite close to the brain, if the optic nerve sheath is perforated with the needle tip, central spread can occur [3]. This is sometimes followed by respiratory depression and brainstem anesthesia, although the risk for the development of serious complications is generally low [4]. Even a negative

aspiration, in these vessels does not guarantee that the tip of needle is not in a vessel as they are very small and thin and negative aspiration can collapse them giving a false belief of normal periocular injection. The neurological effects of confusion, agitation, mild convulsion, aphasia, apparent shivering and unconsciousness may also result from the passage of anesthetic through blood brain barrier, leading to blockage of inhibitory pathways and secondary central nervous system excitation. Depending on the volume of anesthetic agent used, sympathetic hyperactivity can also develop due to involvement of medulla oblongata leading to excitatory stimulation in vasomotor, respiratory and vomiting centres resulting in arrhythmias, hypotension and vomiting [4].

Duration of symptoms may vary from 5-8 min after the administration of peribulbar block upto 60-90 min after which recovery starts. Residual effect may last for as long as 2-4 h, therefore postop monitoring in intensive care is required. Specific Management apart from intubation and mechanical ventilation for respiratory arrest includes intravenous fluid resuscitation and benzodiazepine or barbiturates for seizures management. Use of hypodermic needle may also contribute to CNS complications during peribulbar block. Risk can be decreased by using shorter needles less than 3 cm, rate of complications using larger needle is between 0.2-0.3% [4]. In our case, length of needle was short (25 mm), but complication might have resulted from advancing the needle too far despite negative aspiration and block provided by a junior resident with less experience. Use of ultrasound guided peribulbar block can prevent such complications, but it has few limitations like learning curve,

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experience and comparatively longer time. Further measures to prevent such complication include avoiding injection at deep orbital depth and excessive orbital compression. Our case was similar to that reported by Rozentsveig et al. [2] and Kazancıoğlu et al. [3], as in both these cases, patient had respiratory depression, hypotension and regained consciousness within 1 h without any serious cardiovascular complications and recovery. Even though, peribulbar block is considered safe, patients should be closely monitored under MAC with secured intravenous line and availability of resuscitation equipment's beforehand. At no cost patient monitoring is compromised owing to the short duration of procedure or large burden of patients be operated in short time. The operating room where ophthalmic surgery is performed should be capable of handling all such emergencies.

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