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"AMAUROSIS"- A TRANSIENT OCULAR COMPLICATION AFTER INFERIOR ALVEOLAR NERVE BLOCK: A CASE REPORT.

Dental Science

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ABSTRACT

Amaurosis after inferior alveolar nerve anesthesia is characterized by partial or complete loss of vision, especially without an externally perceptible change in the eye. This case reports a unilateral transient ocular complication after an inferior alveolar nerve block. A 34-year-old female patient was administered a left inferior alveolar nerve block for root canal treatment of tooth #36. Few minutes later patient reported partial loss of vision followed by complete loss of vision from her left eye. Patient completely recovered after 30 minutes. Amaurosis is an unusual ocular complication which can be distressing to both the patient and the clinician. Ocular complications after inferior alveolar nerve block are rare but can still occur. The clinician should be aware of the proper anatomical landmarks before administration of local anesthesia. The clinician should have adequate knowledge about the regional anatomy and can try to minimize the potential for such complications through effective management.

KEYWORDS

Amaurosis, Opthalmoplegia, Ptosis, Mydriasis

INTRODUCTION:

Inferior alveolar nerve block is a commonly used technique for pulpal anesthesia of mandibular teeth.[1] Although millions of cartridges are administered yearly throughout the world, complications may occur.[2]

These complications are most often attributed to an anesthetic solution reaching the orbit or nearby structures.[2] The most common complications include diplopia, amaurosis, ophthalmoplegia, ptosis and mydriasis.[3] These are mostly transient. Permanent complications are exceedingly rare and very few cases have been reported in the literature.[4]

The current case report documents a case of unilateral transient ocular complication after a routine inferior alveolar nerve block, its prevention and management are discussed.

Case report:

A 34-year-old Indian female patient with a noncontributory medical history reported in the Department of Conservative Dentistry and Endodontics Darshan Dental College & Hospital with mild pain in her left lower posterior tooth since past 15 days. Clinical examination revealed a large cavitated carious lesion on the mesio-proximal surface of tooth #36. The tooth was sensitive to vertical percussion and a positive response to electric pulp testing was observed. An intraoral periapical radiograph revealed a deep mesio- proximal caries involving the pulp and widening of the periodontal ligament space in relation to the mesial and distal root of tooth #36.

Based on clinical and radiographic examination, the patient was diagnosed with chronic irreversible pulpitis with apical periodontitis of tooth #36. Root canal treatment was planned with respect to tooth #36. Left inferior alveolar nerve block was achieved using 1.8 mL lidocaine with 1:100,000 adrenaline administered with a 30-mm-long, 28 guage aspirating syringe. The bone was hit at the site of mandibular foramen and aspiration was performed before injecting which revealed an absence of blood. It was followed by injecting the solution near the mandibular foramen.

After 1 to 2 minutes of local anesthetic administration, patient reported blurred vision followed by complete loss of vision from the left eye. Treatment was stopped immediately patient's vital signs were observed which showed no changes. The patient was seated in upright position and was instructed to move his eye in all directions, which indicated normal eye movement in all directions. After 20 minutes, all the symptoms disappeared; however, the patient still complained of a loss of visual acuity, which resolved after 30 minutes.

The patient was discharged from the department after 1 hour of monitoring and was recalled after 24 hrs. On the follow-up visit, no complications were reported by the patient after leaving the clinic. Patient was re-appointed after 2 days and the root canal treatment of tooth #36 was proceeded under local anesthesia.

DISCUSSION:

Ocular complications after intraoral local anesthesia are sequelae associated with anesthesia of the optic (CN II), oculomotor (CN III), trochlear (CN IV), and abducens (CN VI) cranial nerve. The literature reveals numerous cases of amaurosis after inferior alveolar nerve anesthesia. Among the documented ocular complications, diplopia (39.8%) is the most common followed by ptosis (16.7%), mydriasis (14.8%), and amaurosis (13.0%).[5]

The possible cause of ocular complications was described by Wilkie.[6] He claimed that amaurosis results from an intravascular administration of local anesthetic agent into the maxillary artery. Accidental injection into the inferior alveolar artery under pressure forces the anesthetic solution into the maxillary artery and middle meningeal artery via retrograde flow.[7]

A study performed by Ravi et al found that the incidence of amaurosis was higher with a mandibular nerve block.[4] He claimed that the central artery of the retina arises from the ophthalmic artery. If the local anaesthetic passes into this vessel, it may result in transient amaurosis.[4]

Walsh (1957a) noted the occurrence of ipsilateral transient amaurosis after the extraction of upper teeth, and this he attributed to the local anaesthetic reaching the retina via the rich anastomosis between the internal and external carotid arteries shown by Walsh and King (1942).[8]

Cooper[9] reported a case of transient amaurosis followed by diplopia and Horner syndrome–like symptoms.[2]

Given that the patient reported complete loss of vision and loss of visual acuity immediately after the administration of the intraoral local anesthesia, it can be postulated that the combination of intra-arterial injection and anatomic variation is responsible for this event. Although the initial aspiration showed a negative finding in, minor movement of

the patient and the syringe could lead to the penetration of the needle into the wall of the artery with subsequent deposition of the local anesthetic solution.[2]

As stated by Malamed, aspiration directly adjacent to the vessel creates a negative pressure, thus pulling the vessel close to the bevel. When the plunger forces the anesthetic solution out of the needle, the vessel wall can be breached, leading to intravascular deposition.[10]

Aspiration should be performed on at least 2 planes. In addition, the anesthetic solution should be slowly injected, giving a full cartridge over a period of 60 seconds. Smaller- gauge needles are more likely to be deflected as they pass through tissues. Also, because of the smaller lumen, the anesthetic may be injected under greater pressure. A 25 gauge needle is preferred for injections in which the risk of positive aspiration is high.[2]

If the complication occurs, the patient should be informed and instructed to stay calm. The affected eye should be covered with a gauze dressing, and vital signs should be monitored.[7, 11] If at any stage during the administration of the local anesthesia the landmarks are not clearly visualized, administration should be stopped, and alternatives for management should be considered before further delivery of the anesthetic agent.[2]

Amaurosis is a rare alarming complication. By taking proper precautions the clinician can try to reduce the risk for such complications. Therefore, the clinician should be able to identify and effectively manage the complication in order to avoid the development of permanent sequelae.

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