British Journal of Pharmaceutical and Medical Research Vol.02, Issue 01, Pg.394-396 January-February 2017

Available Online at http://www.bjpmr.org

BRITISH JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

DOI: In-Process Volume 02, Issue 01, January-February 2017

Case Study

Combined Mandibular Nerve Block and Superficial Cervical Plexus Block for Parotid Gland Surgery

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ARTICLE INFO

Article History:
Received on 30th November, 2016
Peer Reviewed on 14th December 2016
Revised on 19th January, 2017
Published on 02nd February, 2017

Keywords:
Anesthesia, Regional, Nerve Blocks, Parotid

ABSTRACT

Anesthetic management of surgery on the parotid gland usually invokes general anesthesia in most cases. We report a successful management of incision and drainage of a parotid abscess in an obese patient with combined blocks of superficial cervical plexus and mandibular nerve.

INTRODUCTION:

Usually parotid surgeries are done under controlled general anesthesia. In patients where the facial nerve needs to be monitored, the neuromuscular blocker is withheld and the depth of anesthesia is increased by way of parenteral narcotics and inhalational agents. If it would be possible to anesthetize the patient without targeting the facial nerve then the job of the surgeon of preserving the same becomes easy.[1] Hence local or regional anesthesia assumes significance in parotid surgeries. In this patient, we attempted to administer nerve blocks to anesthetize the parotid region and preserved the facial nerve and successfully managed the case.

Case capsule:

A forty five year old male presented to us with a history of swelling below left ear for the past four days. There was a history of fever with pain at the site. There were no ear complaints. He was a known diabetic on oral hypoglycemic drugs. He was an occasional alcoholic and a non-smoker. The past history was insignificant. On clinical examination, he was mildly febrile, pulse rate of 110/minute and a blood pressure of 126/80 mm Hg. His cardio respiratory systems were normal. He was obese with a weight of 106 Kg. His airway examination predicted a difficult intubation with a restricted mouth opening and a mallampatti score of III. He was having restricted head extension. He was diagnosed as a case of parotid abscess and posted for incision and drainage. (Fig1).

Fig 1 showing red parotid swelling

His blood sugar showed as 275 and was given a shot of five units of intravenous rapid acting insulin. Urine ketones were negative. The other blood investigations were normal except for a total white cell count of 13000.His baseline electrocardiograph was normal. In view of the obesity and difficult airway, we planned for regional anesthesia with a combination of superficial cervical plexus block and a mandibular nerve block. Patient was explained about the procedure. He was given 30 mg of intravenous pethidine and 1 mg of midazolam. With appropriate aseptic precautions a sterile syringe was loaded with 10 ml of 0.5 % Bupivacaine with 0.1 ml of sodium bicarbonate. Out of this mixture, 5 ml was given to block the superficial cervical plexus with ultrasound guidance (Sonosite Exporte) in supine position. The patient was made to sit. The inter condylar notch was palpated anterior to left tragus. Local anesthetic infiltration was *not* done. The needle was inserted perpendicularly in the middle of the notch to hit the pterygoid plate. The needle was slid posteriorly off the bone to deposit 5 ml of Bupivacaine (fig 2)

Fig 2 showing intercondylar mandibular nerve block

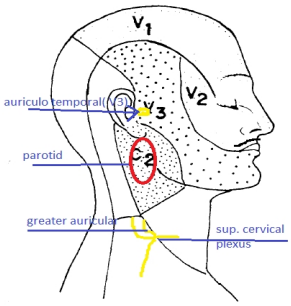
Anesthesia was assessed with mild pinprick and the area of incision was anesthetized in around ten minutes. The area of superficial cervical plexus with specific reference to auriculo temporal nerve was completely anesthetized. The patient was asked to blow the cheek to test for buccinator muscles which remained intact. The surgery was started with a four cm incision and proceeded for twenty minutes. There were no untoward complications. The postoperative period was uneventful and was discharged after three days with stringent glycemic control.

Discussion:

The most common indication of parotidectomy is a parotid mass necessitating a surgery with histological diagnosis. The commonest cause of parotid mass is a benign tumor, the incidence of which is estimated to be 2.4 per 100,000. In all these cases, preservation of facial nerve which travels inside the substance of the parotid gland is the crucial step in the surgical process[1]. During the intra operative period, stimulation of the facial nerve to see twitching is seen. Frequently the surgeon may ask to withhold neuromuscular blockers for easy identification. General anesthesia with controlled ventilation is usually used which utilizes muscle relaxants and hence the problem of facial nerve injury erupts. Hence regional anesthesia is contemplated and successfully done in few cases. Chow TL et al[2] have done seven cases of parotid surgery under superficial cervical plexus block and local anesthesia. They have not done mandibular nerve block but there was no conversion to general anesthesia. Kamran shahid et al[3] did three cases of parotidectomy with block of the specific ascending branches of the superficial cervical plexus and mandibular nerve by using more than 20 ml of the

local anesthetic. But in our case we used ultrasound to inject only 5 ml of 0.5 % Bupivacaine in the superficial cervical plexus. Only a total of ten ml was used. The site of incision with regard to parotid surgery is innervated by greater auricular branch of superficial cervical plexus belonging to C2 dermatome. The substance of the parotid gland is supplied by auriculotemporal nerve which is a branch of mandibular nerve (V3).Both these specific nerves can be blocked separately also but we preferred to block the entire plexus and nerve in these sites probably to get a feel of anesthesia in the surrounding areas of incision. This may add to a better cooperation from the patient. (fig. 3)

Fig 3 showing sensory innervations and the concerned blocks of the parotid gland



Facial nerve is predominantly motor. There is no obvious sensory supply to the area of surgery from the facial nerve. Hence it need not be blocked. It is advantageous to have a patient like this, as one can do intra operative motor activities of the facial nerve to assess the integrity of the nerve. We purposely avoided local infiltration before mandibular nerve block, as an injection of the local anesthetic in the intercondylar area can anesthetize the facial nerve. This becomes the biggest advantage of doing a parotid surgery with regional anesthesia. During administration of general anesthesia, usually muscle relaxants are administered which interferes with the monitoring of facial nerve integrity, yet it is the preferred and commonly used method of anesthesia. Regional anesthesia of the face is not commonly used as a sole anesthetic technique in routine anesthetic practice. Combined maxillary and mandibular nerve blocks have been used rarely as a sole anesthetic technique in dental surgeries[4]. We added recommended dose of sodium bicarbonate for the possible combined better effect of improved onset and quality of nerve blockade[5] in our patient as we had clinical anesthesia in five minutes after administration of the block. KS. Sethna et al[6] described eleven cases of parotid surgery with combined blocks of maxillary, mandibular and greater auricular nerve. We decided on an anatomical basis to leave out maxillary nerve as it is not connected with the nociceptive area of the parotid gland. The limitation of our report could be that we could have done the mandibular nerve block also under ultrasound guidance.

Conclusion:

Regional anesthesia for parotid surgery with preservation of facial nerve for intraoperative monitoring could be possible with combined blocks of the superficial cervical plexus and mandibular nerve.

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