

Pourfour Du Petit syndrome after interscalene block

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ABSTRACT

Interscalene block is commonly associated with reversible ipsilateral phrenic nerve block, recurrent laryngeal nerve block, and cervical sympathetic plexus block, presenting as Horner's syndrome. We report a very rare Pourfour Du Petit syndrome which has a clinical presentation opposite to that of Horner's syndrome in a 24-year-old male who was given interscalene block for open reduction and internal fixation of fracture upper third shaft of left humerus.

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INTRODUCTION

The brachial plexus block by interscalene approach was first described by Winnie.^[1] This approach is most useful for surgeries around shoulder. It is not uncommon to be associated with reversible ipsilateral phrenic nerve block, recurrent laryngeal nerve block, and cervical sympathetic plexus block, presenting as Horner's syndrome. We report a case where the patient developed Pourfour Du Petit syndrome (PDPs), which has a clinical presentation opposite to that of Horner's syndrome, following interscalene block.

CASE REPORT

A 24-year-old male with fracture upper third shaft of left humerus was posted for open reduction and internal fixation. Patient had an insignificant post-anesthetic exposure for left inguinohernioplasty under spinal anesthesia. Patient was explained about the option of regional anesthesia for the above surgery and also about the possible complications. He agreed for the brachial plexus block. Patient was 152 cm tall, weighed 70 kg with no coexisting disease, and had normal physical examination and routine investigation.

A left brachial plexus block was performed under aseptic precautions by interscalene approach using a 22-gauge, 2-inch insulated needle with extension tube assembly (Stimuplex[®], B Braun, Melsungen AG, 34209, Melsungen, Germany) after localizing the plexus with the help of the nerve stimulator by eliciting motor response at shoulder and upper arm at 0.5 mA. With all standard monitors, 40 ml of local anesthetic solution containing 200 mg of lignocaine with 50 µg adrenaline and 50 mg of bupivacaine was injected slowly over 5 min. Adequate sensory and motor block was achieved. But within 10 min after injection of local anesthetic solution, patient complained of increased sweating in the face and diminished vision in the left eye. On examination, sweating was confined to the left half of the face with widened palpebral fissure of the left eye and the left pupil was dilated in comparison to the right pupil (4 mm/2 mm). Patient was reassured and the surgery was completed successfully. These symptoms resolved when the plexus functions returned to normal.

DISCUSSION

PDPs, also known as reverse Horner's syndrome, is an uncommon focal dysautonomic syndrome characterized by mydriasis, eyelid retraction, and hyperhydrosis. PDPs was first described by Francois Pourfour Du Petit (1664-1741), a French physician, during Napoleonic wars in soldiers who showed signs of increased sympathetic activity in the eyes and upper extremity following slashed wound of neck with sword.^[2] He experimentally induced the above condition in dogs by cutting their cervical chain bilaterally.^[2] He

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ascribed the above signs to the cervical sympathetic chain injury due to any compression, irritation, or injury of the sympathetic chain.

PDPs has been described in association with non-penetrating injuries of the cervical sympathetic chain and brachial plexus,^[3] intracranial aneurysm,^[4] aortic malformation,^[5] post-traumatic syringomyelia,^[6] severe cranioencephalic trauma,^[7] thoracic tumors (first rib chondrosarcoma,^[8] esophageal carcinoma,^[9] and lung carcinoma^[10]), maxillofacial surgery (parotidectomy,^[11] mandibular tumor resection^[12]), and thyroid carcinoma.^[13] PDPs has also been reported as the manifestation of rapid spontaneous redistribution of acute supratentorial subdural hematoma to the entire spinal subdural space.^[14] Sympathetic dysfunctions are common following regional anesthetic procedures like subarachnoid, epidural, and brachial plexus blocks,^[15] but in almost all cases, the dysfunction will be in the form of sympathetic block. The sympathetic excitatory symptoms are rare, often transient,^[16] and under diagnosed. The pure excitatory sympathetic dysfunction like PDPs following brachial plexus block is a very rare presentation, and literature of Medline has only one reported case of PDPs following brachial plexus block.^[15] Our patient presented with the typical clinical picture of PDPs following interscalene block. The accurate pathophysiology of PDPs due to brachial plexus is not fully understood. It may be either due to partial blockade of cervical sympathetic chain by local anesthetic drugs or due to direct irritation of part of cervical sympathetic chain by the needle during the procedure, which leads to sympathetic hyperactivity of unblocked or irritated portion of cervical sympathetic chain. In our case, it was possibly due to the partial cervical sympathetic chain blockade by local anesthetic drugs as the symptoms and signs of PDPs resolved as the brachial plexus functions returned to normal.

Outcome of the PDPs due to other causes is highly unpredictable. The signs of sympathetic hyperactivity may remain for indefinite time^[5,11] or may resolve in few hours to months after stopping the underlying stimulus.^[3,7]

CONCLUSION

PDPs is a very rare dysautonomic complication due to brachial plexus block and anesthesiologist should be aware

of the possibility of this syndrome which has a clinical presentation that is reverse of Horner's syndrome.

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