Editorial

Sphenopalatine ganglion block a jack of all trades block

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Abbreviations: SPG, Sphenopalatine Ganglion, PPG, Pterygopalatine Ganglion, PPF, Pterygopalatine Fossa, GSPN, Greater Superficial Petrosal Nerve, DPN, Deep Petrosal Nerve, PHN, Post Herpetic Neuralgia, PDPH, Post Dural Puncture Headache; SPGB, Sphenopalatine Ganglion Block

Editorial

Sphenopalatine ganglion block has many different clinical applications in pain medicine from low back pain to different kinds of headaches, even headaches after spinal injection (PDPH) (Table1). This block is the only block in Interventional pain management that has this ability. Why this ganglion is so special? What makes it unique and distinguishes. What seems to think is that, sphenopalatine ganglion is probably located in a particular anatomic place or has especial nerve fibers or a peculiar connection with higher centers of the brain, and perhaps it has all of these properties or can be other causes. It is better that we have an overview of the anatomy and neuroanatomy and study nerve fibers that enters into this complex and search for its communications with the central nerve system. After that investigate how these blocks could control pain syndromes. Later a bit, maybe find the answer.

The pterygopalatine or sphenopalatine ganglion (PPG, SPG) is one in all four tiny parasympathetic ganglia found within the head. It is the largest parasympathetic ganglion outside the cranium. This square measure (2 in 1) ganglions, placed on both sides of the middle face at the pterygopalatine fossa (PPF). The branches of the pterygopalatine ganglion carry sympathetic, parasympathetic and general sensory fibers.

The greater superficial petrosal nerve (GSPN) is a preganglionic parasympathetic nerve from the superior salivatory nucleus in the pond, which via the nervous intermediates of the facial nerves traverse, but not synapse at the geniculate ganglion of the facial nerve. It connects deep petrosal nerve (DPN). Sympathetic fibers from T1 – T3 synapse at the superior cervical ganglion. Sympathetic postganglionic fibers along the internal carotid artery entering the skull as DPN at the proximal part of the canal and form the Vidian nerve, that traverses through the pterygoid canal and reaches the PPF.

The ganglion is joined by general sensory fibers from the maxillary branch and these nerves forms the sensory component of the SPG. The trigeminal nerve has no autonomic function. The facial cranial nerve that renders the parasympathetic autonomic secretomotor function utilizes the trigeminal cranial nerve as an anatomical vehicle for its postganglionic parasympathetic fibers.[1] The branches of parasympathetic fibers which innervate the cerebral and meningeal blood vessels activated and released neuropeptides that cause vasodilation and/or activation of trigeminal nociceptor fibers in the meninges. It is perceived as referred pain from the head by the sensory cortex.

As a result of the trigeminal-autonomic reflex activation SPG is believed to have a role in headache and cranial autonomic symptoms associated with cluster headache. Cranial parasympathetic outflow contributes to migraine pain by activating or sensitizing (or both) intracranial nociceptors, which induce parasympathetically independent allodynia by sensitizing the central nociceptive neurons in the spinal trigeminal nucleus. SPG has been the site for a variety of clinical interventions for the headaches treatment as a result of the involvement of the SPG within the trigeminal-autonomic pain reflex. Stimulation of the parasympathetic fibers of the sphenopalatine ganglion related to primary headache disorders such as cluster headaches and migraines, trigeminal autonomic cephalgia)TAC) and cerebrovascular regulation) CVR). The sympathetic post ganglion fibers involved in post herpetic neuralgia (PHN), atypical facial pain, and CVR. The trigeminal sensory fiber from maxillary nerve involved in somatosensory pain in headache, trigeminal neuralgia or orofacial pain.[2-4]

Identification of a nerve, which runs between the PPG and the ophthalmic nerve with sensory and parasympathetic fibers may provide an anatomic basis for pain relief in the ophthalmic area after PPG blockage.[5] So three possible mechanisms of sphenopalatine ganglion block (SPGB) are:

a. Interrupting the post-ganglionic parasympathetic path that inhibits the pain and cephalic autonomic symptoms,

b. The sensory process modulation in the trigeminal nucleus, and

c. Block of sympathetic mediated pain due to interruption of postganglionic sympathetic outflow.[4,6,7]

After a little overview of anatomy, neuroanatomy and physiology of the sphenopalatine ganglion we understand the complex structure of the ganglion. The proximity of this ganglion, to brain is very important and availability of it outside the skull gives easy access to Interventional procedures. Variable indications and jack of all

trades abilities of SPGB may be due to this unique *neuroanatomy and physiology.*

Table 1 Indications of Sphenopalatine Ganglion Block

Indications
Cluster Headaches Migraines
Chronic Migraine
Acute Headache
Tension Headache
Paroxysmal Hemicranias
Atypical Trigeminal Neuralgia
Trigeminal Autonomic Cephalalgias
Orofacial Pain
Sphenopalatine Ganglion Neuralgia (Sluder Neuralgia)
Cerebrovascular Disorders (Stroke, Cerebral Vasospasm)
Postdural Puncture Headache
Refractory Cranio-Facial Pain
Headache and Facial Pain Due to Cavernous Sinus Meningioma
Pain due to Advanced Head and Neck Cancer
Complex Regional Pain Syndrome Involving the Lower Extremity
Sympathetic Mediated Pain
Eye Disorders
Vasomotor Rhinitis
Sinus Arrest in Postherpetic Trigeminal Distribution Neuralgia
Fibromyalgia
Myofascial Pain Syndrome
Preemptive & Postoperative Analgesia After Endoscopic Sinus Surgery
Arthritic Pain and Deformity
Low Back Pain
Lumbosacral Pain
Treatment of Nicotine Addiction

Conflicts of Interest

The authors do not have any Conflict of interests.

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