SIGNIFICANCE OF TRIGGER POINT IN TRIGEMINAL NEURALGIA

Mumtaz Ali, Khalid Mahmood Khan, Khalid Anwar Khanzada, Shahid Ayub, Hamzullah Khan

Department of Neurosurgery
Postgraduate Medical Institute, Lady Reading Hospital, Peshawar

ABSTRACT

Objective: *To know the significance of trigger point as an indicator of aberrant vascular loop in patients with trigeminal neuralgia.*

Material and Methods: *This study was performed in the department of neurosurgery Postgraduate Medical Institute, Lady Reading Hospital, Peshawar from May 2003 to April 2006. Patients with clinical history of trigeminal neuralgia were admitted for micro vascular decompression. Detailed clinical history, along with clinical findings particularly side and site of trigger point of trigeminal pain were documented. Imaging studies like CT, MRI were done in these cases and per-operative findings were documented after surgical procedure.*

Results: *Forty-three patients with trigeminal neuralgia were operated for micro vascular decompression during the study period. There were 24 (55.8%) males and 19 (44.2%) females with ratio of 1.2: 1, and a mean age of 53 years. Duration of symptoms was from 3 to 7 years. A total of 43 cases of trigeminal neuralgia were recorded. Right side was involved in 19 and left side in 24 cases. Peri-oral and peri-nasal trigger point was observed in 39 (90.7%) cases during examination while offending arterial loop was seen in 35 (81.4%) cases per-operatively, thick arachnoid adhesion in 4 (9.3%) cases and veins in 4 (9.3%) cases.*

Conclusion: *Trigger point during clinical examination indicated the presence of offending arterial loops in patients with trigeminal neuralgia.*

Key Words: *Trigeminal neuralgia, Trigger Point, Aberrant Vascular loop, micro vascular decompression.*

INTRODUCTION

Trigeminal neuralgia is one of the most unbearable pain syndromes and perhaps the worst pain known to human being. The[1] pathophysiology of this syndrome of paroxysmal pain is unknown.[2] Both central and peripheral mechanisms have been hypothesized by various researchers[3] but most clinical observers support the peripheral mechanism in which compression at pre-ganglionic trigeminal root in posterior or middle cranial fossa occurs.[4] Cross compression by an arterial loop imposed upon the nerve as a result of vascular elongation secondary to aging process or by vein or both is the abnormality associated with this disorder. Certainly the diagnosis is made clinically on a strong history of severe, instant onset of relatively brief, intense paroxysm of electric shock like lancinating pain confined to the territory of trigeminal nerve. Trigger point has great significance in clinical examination that may probably indicate the presence of causative agent. Focal vascular pulsating contact at DREZ (Dorsal Root Entry Zone) can be easily triggered by light, non-noxious tactile stimuli. The tics are due to arteriosclerotic tortuous elongation of arterial loop that is elicited clinically.[5] Present study was therefore designed as to determine the significance of trigger point as an indicator of aberrant vascular loop in patients with trigeminal neuralgia.

MATERIAL AND METHODS

This was a prospective study with a main objective of significance of trigger point in patients of trigeminal neuralgia. Patients with clinical history of trigeminal neuralgia were admitted for micro vascular decompression (MVD). Detailed clinical history, along with

PRE-OPERATIVE FINDINGS

Pre Operative Findings	Number of Patients (n=43)	Percentage
Trigger Point	39	90.7
Facial numbness	02	4.7
Diabetes Mellitus	02	4.7
Multiple Sclerosis	01	2.3

Table 1

clinical findings particularly side and site of trigger point of trigeminal pain were documented. Patients with secondary trigeminal neuralgia due to mass lesion, those not willing or not fit for surgery were excluded from the study. Imaging studies like CT, MRI were done in these cases and per-operative findings were documented after surgical procedure.

RESULTS

Peri-oral and peri-nasal trigger point was observed in 39 (90.7%) cases during examination while offending arterial loop was seen in 35 (81.4%) cases per-operatively, thick arachnoid adhesion in 4 (9.3%) cases and veins in 4 (9.3%) cases. Forty three patients with trigeminal neuralgia were operated within three years from May 2003 to April 2006. There were 24 (55.8%) males and 19 (44.2%) females with ratio of 1.2: 1. Age range of these patients was between 34 to 78 years with mean age of 53 years. Duration of symptom of trigeminal pain was from 3 to 7 years. Unilateral involvement was noted in 41 (95.3%) cases while bilateral involvement was seen in 2 (4.7%) cases. Symptoms were common on left side in 24 (55.8%) cases and on right side in 19 (44.2%) cases. Trigger point was noted in 39 (90.7%) cases while facial numbness in 2 (4.7%) cases (Table-1). Twenty-eight (65.1%) patients had history of dental extraction and one (2.3%) had neurectomy to seek relief from the pain (Table-2). The operative findings indicating the cause of neuralgic pain are summarized in table-3. Offending arterial loop was seen in 35 (81.4%) cases per-operatively, thick arachnoid adhesion in 4 (9.3%) cases and veins in 4 (9.3%) cases. Mastoid air cells were opened in 6 (14%) cases, dura was inappropriately approximated in 5 (11.6%) cases, and rupture of petrosal vein in 3 (7%) cases, were the common intra operative complications (Table-4). Vomiting, diplopia and vertigo, CSF leakage and facial numbness were among the common post operative complications (Table-5).

DISCUSSION

Trigeminal neuralgia is one of the most painful and debilitating diseases known to human being.[6] It is the disease of severe spasm of facial

TREATMENTS OFFERED PREVIOUSLY

Type of treatment taken	Number of Patients (n=43)	Percentage
Dental extraction	28	65.1
Neurectomy	1	2.3

Table 2

pain without loss of power or sensation. Pain[7] with light touch (trigger point) is a significant point in clinical features of this disease. Trigger point is usually located in the peri-oral, oral, or peri-nasal region.[8] Aside from trigger point, the neurological examination is essentially normal. Trigeminal neuralgia is the disease of middle and old people, which is common both in male and female gender.[5] In one of the large study of 579 cases, mean age was 60 years with 53% females and 47% males.[9] We noted mean age of 52 years in our study. In another study of 536 cases[10], 25 cases were having bilateral pain and 511 cases unilateral pain, in whom left sided pain was noted in 312 and right sided in 203 cases. In our series, unilateral pain was noted in 41 cases with slight dominance on left side that is comparable with the percentage of cases of large series. Unilateral pain limited to the distribution of trigeminal nerve is usually seen in 90% cases but can occur bilaterally as well.[11] We noted bilateral pain in two cases, in whom one patient was suffering from multiple sclerosis and the other with diabetes mellitus. Both these patients were referred from neurology department with least response to medical treatment.Patients prior to surgical consideration should have MRI scan with close attention being paid to posterior fossa[12] to rule out other causes of compression of trigeminal nerve such as mass lesion, large catotic vessel and vascular malformation. We did MRI in 35 cases and CT scan in 40 cases to exclude mass lesion or vascular pathology in the cerebello-pontine (CP) angle area.

Micro Vascular Decompression (MVD) has undoubtedly gained wide acceptance over the last

PRE-OPERATIVE FINDINGS

Operative findings	Number of Patients (n=43)	Percentage
Aberrent vascular loop at Dorsal Root Entry Zone	30	69.8
Aberrent vascular loop grooving at Dorsal Root Entry Zone	4	9.3
Aberrent Vein	4	9.3
Arachanoid Adhesions	4	9.3
Aberrent Vascular loop in branches of Trigeminal Nerve	1	2.3

Table 3

PER-OPERATIVE COMPLICATIONS

Complication (Per Operative)	Number of Patients (n=43)	Percentage
Mastoid air cell opening	6	14
Inappropriate dural approximation	5	11.6
Rupture of Petrosal vein	3	7
Small tear in Transverse Sinus	1	2.3
Bradycardia	1	2.3

Table 4

POST- OPERATIVE COMPLICATIONS

Complication (Post- Operative)	Number of Patients (n=43)	Percentage
Vomiting	11	25.6
Diplopia	7	16.3
CSF Leakage	5	11.6
Facial numbness	5	11.6
Facial paresis	2	4.7
Wound Infection	1	2.3

Table 5

decade as a treatment of trigeminal neuralgia due to the fact that it is directed to the hypothesized cause of the disease (vascular compression). [13] Peter and Thomas confirmed that vascular compression of the trigeminal nerve is an anatomical abnormality specific to trigeminal neuralgia (TN) [14]. We found aberrant arterial loop (superior cerebellar artery in 23, anterior inferior cerebellar artery in 11and basilar artery in one case), veins in 02 and arachnoid adhesions in 04 cases. In another reported study of 536 cases [15] arterial compression was seen in 78%, vein in 12%, and vein and artery both in rest of the cases.

It was Jannetta [16] who proposed vascular contact as a cause of pain and popularized microvascular decompression as a curative procedure. Long term effects of microvascular decompression indicate that it is very effective and typically does not produce a sensory deficit with few infrequent complications. The trigger point has significance in the clinical diagnosis of trigeminal neuralgia but its importance as a predictor of underlying offending arterial loop has not been documented. [13] In our study we observed that 35 out of 39 cases with trigger point were having arterial loops. In atypical trigeminal neuralgia other causes like sinusitis, brainstem infarction, metabolic disorders like diabetes mellitus and multiple sclerosis should be excluded. We did not observe trigger point in patients with multiple sclerosis in whom no vessel was found. In 4 of our positive trigger point cases 3 were having arachnoid adhesions and one patient aberrant vein. This indicates that compression of pulsating nature probably lead to triggering of pain.

CONCLUSION

From this study we conclude that positive trigger point during clinical examination indicated the presence of offending arterial loop as a cause of compression. One should focus on MRI to see the aberrant vessels in patients with positive trigger point.

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Address for Correspondence:
Dr Mumtaz Ali
Department of Neurosurgery,
Postgraduate Medical Institute,
Lady Reading Hospital,
Peshawar – Pakistan.