

Management of Trigeminal Neuralgia

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ABSTRACT

Aim: To determine the efficacy and achievement of better results by applying different modalities of management, depending upon the anatomical structures involvement.

Methods: This descriptive study included 20 patients of trigeminal neuralgia. This study was carried out at Department of Neurosurgery, Hayatabad Medical Complex, Peshawar from August 2012 to August 2013. All patients either sex, age between 35 to 65 years were included. Those patients have 18 to 30 years were excluded.

Results: There were 15 males and 5 females patients of trigeminal neuralgia. Recurrence rate is higher in patients with multiple sclerosis 50%. At the end of follow-up, excellent outcome was obtained in 10 patients, good outcomes were obtained in 5 patients and also 5 patients were recorded as fair outcomes respectively. Overall success rate was 100%.

Conclusion: Knowledge of its anatomic course allows an understanding of disorders involving the brainstem and adjacent skull base. Variety of conditions may involve the different segments of the trigeminal nerve.

Keywords: Management, Trigeminal neuralgia, Brain Tumor.

INTRODUCTION

Trigeminal neuralgia is caused by a dysfunction in the peripheral nervous system (the roots or trigeminal nerve itself), a lesion within the central nervous system may rarely cause similar problems. A brain tumor is one of the most distressing forms of human illness, especially when happening in the posterior fossa. Brainstem compression, herniation, and death are all risks in tumors which occur in this critical location. Patients of TN are managed with medical and surgical treatment. Medical treatment is as; weight reduction and treatment of any associated cause of cessation of any associated substances and use of diuretics like acetazolamide and loop diuretics. Because most patients incur trigeminal neuralgia when older than 60 years, medical management is the logical initial therapy. Medical therapy is often sufficient and effective, allowing surgical consideration only if pharmacologic treatment fails. Medical therapy alone is adequate treatment for 75% of patients. Surgical treatment has shown different results with very minimal complication such as over drainage, subdural hematoma, infection and allergy. When patient stabilizes after surgery follow up visits can be extended from 1 to 6 months. In a review of surgical options by Tatli et al, which mostly included microvascular decompression and radiofrequency

thermorhizotomy, each surgical technique for treatment of trigeminal neuralgia had merits and limitations. The investigators also found that microvascular decompression provides the highest rate of long-term patient satisfaction with the lowest rate of pain recurrence. Most cases of trigeminal neuralgia are caused by neurovascular compression. However, contact between the trigeminal nerve and vessels has been reported in asymptomatic cadavers. Advances in MRI have made it possible to demonstrate accurately the relationship between the trigeminal nerve and surrounding vessels. There are many causes of trigeminal neuralgia, one of the most common being neurovascular compression. Neurovascular compression can be of either arterial or venous origin, but the former is more common than the latter. A persistent primitive trigeminal artery is the most common of the embryonic carotid-basilar anastomoses that remain into adulthood; an incidence of 0.1–1.0% has been reported.

PATIENTS AND METHODS

This descriptive study included 20 patients of trigeminal neuralgia. This study was carried out at Department of Neurosurgery, Hayatabad Medical Complex, Peshawar from August 2012 to August 2013. Patients having age 35 to 65 years were included. Those patients have age 18 to 30 years were excluded. The neurological examination is ordinarily normal except for mild sensory changes in a few patients in the region of their pain with the exception that those few patients with multiple sclerosis. The pharmacologic therapy is to reduce

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pain. Carbamazepine (Tegretol) is regarded as the most effective medical treatment. Additional agents that may benefit selected patients include phenytoin (Dilantin), baclofen, gabapentin Neurontin, Trileptol and Klonazepin. Prior to considering surgery, all trigeminal neuralgia patients should have a MRI, with close attention being paid to the posterior fossa. Imaging is performed to rule out other causes of compression of the trigeminal nerve such as mass lesions, large ectatic vessels, or other vascular malformations. The outcome of pain relief was categorized into three results (excellent, good and fair). Complete pain relief without the use of any analgesic medication was defined as an excellent outcome. Complete pain relief with still requiring some medication was defined as a good outcome. Partial pain relief (>50% relief) was defined as a fair outcome. Postoperatively the patients routinely have H/A and nausea for 2-3 days there may be less intracranial air and less pneumoencephalogram sickness if the park-bench position is used instead of the sitting position.

RESULTS

Twenty cases of trigeminal neuralgia were included. There were 15 patients (75%) males and 5 patients (25%) females with ratio of 3:1 (Table 1). Results of various PTR techniques compared to microvascular decompression 'MVD'(Table 2). Recurrence rate is higher in patients with multiple sclerosis 50%. At the end of follow-up, after radiosurgery, complete pain relief without medication 'excellent' was obtained in 10 patients (50%), good outcomes were obtained in 5 patients (25%) and also 5 patients (25%) were recorded as fair outcomes respectively. Overall success rate was 100% (Table 3).

Table 1: Percentage and frequency of genders

Gender	n.	%
Male	15	75.0
Female	5	25.0

Table 2: Comparison of outcome of percutaneous techniques to microvascular decompression (MVD)

Parameter	Percutaneous Technique			MVD
	PFR	Glycerol	Balloon	
Initial success rate	91-99%	91%	93%	85-98%
Medium-term recurrence rate	19% at 6 years	54% at 4 years	21% at 2 years	15% in 5 years
Long-term recurrence rate	80% at 12 years	-	-	30% at 10 years
Facial numbness	98%	60%	72%	2%

Table 3: Overall results of microvascular decompression

Results	No.	%
Excellent	10	50.0
Good	5	25.0
Fair	5	25.0

DISCUSSION

Despite the relative lack of understanding of pathophysiological mechanisms of trigeminal neuralgia, very effective medical and surgical treatments have been developed. The vascular intracranial hypertension occurs, vascular cerebral diseases: cerebral venous thrombosis or in cerebral ischaemic stroke and in extracerebral vascular diseases as hypertensive encephalopathies. Intracranial hypertension caused by the disorders of the CSF dynamics (hydrocephalus etc).

The mean age varies, according to the inclusion criteria of various studies. A study done by Gans showed that the most of the patients between third decades of age. Although intracranial hypertension may affect individuals of any age, most patients with this disease present in the third decade of life. In another study carried out by Pless the primary intracranial hypertension, also known as idiopathic intracranial hypertension, occurs without known cause. This form most often occurs in young, overweight, females in their reproductive years (ages 20-45). A study done by Tarnaris the mean age was 35±7.9 years which was comparable with our study.

In the present study 15 patients (75%) were males, while 5 patients (25%) were females, with male to female ratio of 3:1. In a study carried out by Wall there was a strong predilection of this disease exists for men. However, men with vascular intracranial hypertension are twice as likely as women to lose visual function due to their papilledema. Thus, the visual function of men with vascular intracranial hypertension must be followed more closely to avoid irreversible damage.

Until recently, the inability to demonstrate neurovascular compression of the trigeminal nerve preoperatively resulted in surgery being offered only in cases of severe trigeminal neuralgia, frequently after a prolonged trial of medical treatment and following less invasive procedures, despite the fact that posterior fossa microvascular decompression gives long-term pain relief in 80% to 90% of cases.

CONCLUSION

Patients with trigeminal neuralgia who has no visible mass along the trigeminal pathways should first obtain a trial of suitable pharmacological therapy. Medical management is successful in about one-half of patients. Detailed history and thorough clinical

examination are most essential to avoid wrong diagnosis and inappropriate interventions. A vascular compression being the established cause of trigeminal neuralgia, microvascular decompression is the most logical and curative procedure of treatment.

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