

ORIGINAL ARTICLE

FREQUENCY OF CEREBELLOPONTINE ANGLE TUMOURS IN PATIENTS WITH TRIGEMINAL NEURALGIA

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Background: Though the classical type of trigeminal neuralgia is the most common type with the neurovascular conflict causing the symptoms, yet quite some patients have the secondary type of trigeminal neuralgia in which space occupying lesions are responsible for the symptoms. This study was conducted to determine the frequency of cerebellopontine angle tumours in patients presenting with complaints of trigeminal neuralgia. **Methods:** This case series descriptive study was conducted in the department of Neurosurgery, Ayub Medical College, Abbottabad, from January 2009 to January 2012. It included patients who presented with symptoms of trigeminal neuralgia. Patients were subjected to further radiological investigation like Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) to look for secondary causes of trigeminal neuralgia. **Results:** Among the 134 patients with age ranges 13-64 (51 ± 4.3) years of age, 78 (58.2%) were females and 56 (41.7%) were males. Frequency of cerebellopontine angle tumours in patients was 14 (10.4%), among them epidermoid was most common lesion being present in 10 (7.4%) of patients and accounted for 75% of Cerebellopontine Angle tumours in these patients. Meningioma and vestibular schwannoma accounted for 2 (1.4%) cases each. In secondary trigeminal neuralgia mean age of onset of symptoms was 39.5 ± 5.2 years as compared to classic trigeminal neuralgia which is 53 ± 2.1 years. **Conclusion:** Trigeminal Neuralgia can be a typical symptom in cerebellopontine angle tumours like epidermoid, especially in young patients, so all the patients with trigeminal neuralgia should be investigated for lesion in cerebellopontine region.

Keywords: Trigeminal Neuralgia, Cerebellopontine Angle Tumours

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INTRODUCTION

Trigeminal neuralgia is classically defined as "sudden brief, usually unilateral, severe, recurrent pain in the distribution of one or more branches of trigeminal nerve". It is usually triggered by daily activities such as eating, talking, or brushing teeth.¹ Trigeminal neuralgia is the most common type of facial pain with a prevalence of 4 per 100,000 in general population. Most commonly it effects patients with age more than 50 years and occurs most frequently in women then man with a ratio of up to 2:1. In most of the cases pain lasts from few seconds to two minutes. It may recur spontaneously with pain free intervals.² But even during the pain free periods the patients are overwhelmed with the thoughts of next episode of pain.

Trigeminal neuralgia has a significant impact on the quality of life and the socioeconomic activities of the patients and most of patients have some element of depression because of the symptoms.^{1,2} Trigeminal neuralgia is either of classical type or secondary trigeminal neuralgia. Classic trigeminal neuralgia is caused by vascular compression of trigeminal nerve root while secondary trigeminal neuralgia is caused by other factors such as tumours, vascular disorders, and demyelination in multiple sclerosis. Frequency of

cerebellopontine angle tumours in trigeminal neuralgia in different series is 1-9.9%.³

Pathophysiology of trigeminal neuralgia remains unclear, but evidence suggests that pain occurs because of pressure on the trigeminal nerve root at entry zone into the pontine region of the brain stem. Compression by tumour causes local pressure on nerve which leads to demyelination of the trigeminal nerve. This makes the trigeminal nerve more prone to ectopic action potential generation. The lesion can also displace trigeminal nerve and compression against a blood vessel at the root entry zone. Another cause may be due to irritant, inflammatory nature of the epidermoid tumour which may cause pain when the nerve is completely wrapped by the tumour.⁴⁻⁶

This study was conducted to determine the frequency of cerebellopontine angle tumours in patients presenting with complaints of trigeminal neuralgia in order to provide recommendation that every patient with symptoms of trigeminal neuralgia should be investigated for cerebellopontine angle space occupying lesions.

MATERIAL AND METHODS

This case series descriptive study was carried out in the Department of Neurosurgery Ayub Medical College Abbottabad, Pakistan from January 2009 to

January 2012. Patients who fulfilled the diagnostic criteria of Trigeminal Neuralgia by the International Headache Society⁷ were included in this study through consecutive non-probability sampling. These patients had attacks of facial pain lasting from a fraction of a second to 2 min, affecting one or more divisions of the trigeminal nerve and having the characteristics of either being intense, sharp, superficial, or stabbing and Precipitated from trigger zones or by trigger factors. The patients who had permanent unilateral facial pain of variable intensity associated with neurological disorders were excluded from this study. Patients with history of trauma or having bilateral facial pain were also excluded from the study. Informed consent was taken from the patients. Patients were further investigated by CT and MRI, to look for the secondary causes of trigeminal neuralgia. Patients demographic data, presenting complaints and radiological findings were recorded in the pre-designed pro forma. In cases of trigeminal neuralgia secondary to cerebellopontine angle tumours, histopathological type of tumour was also recorded. Data was analysed in SPSS-14.

RESULTS

A total of 134 patients were included in this study, 78 (58.2%) were females and 56 (41.7%) were males. Patients age ranged from 13–64 years with a mean age of 51 ± 4.3 years. Frequency of cerebellopontine angle tumours in patients presented with trigeminal neuralgia were 14 (10.4%). Among those having cerebellopontine tumours, epidermoid was most common in 10 (7.4%) while meningioma and vestibular schwannoma accounted for 2 (1.4%) cases each.

Secondary trigeminal neuralgia when compared to classical trigeminal neuralgia due to vascular causes was clinically indistinguishable except symptoms onset at a younger age. In secondary trigeminal neuralgia mean age of onset of symptoms was 39.5 ± 5.2 years as compared to classic trigeminal neuralgia which is 53 ± 2.1 years.

DISCUSSION

Trigeminal neuralgia is characterized by episodes of lancinating pain in the distribution of the trigeminal nerve. The severity of pain results in significant patient's anxiety, malnutrition and even depression. Aetiologies of this condition are diverse and includes neoplasms or demyelination, 80–90% of cases are related to compression of the trigeminal nerve by an adjacent vessel.^{8,9} Radiological investigations like CT or MRI should be done to exclude cases evoked by other diseases like epidermoid, meningioma, trigeminal schwannoma located at cerebellopontine angle.¹⁰

Our study showed that frequency of cerebellopontine angle tumours in patients presenting with trigeminal neuralgia is 10.4% which closely resembles to the study of Cruccu G *et al* who showed in his study that 1–9.9 % cases of trigeminal neuralgia are caused by cerebellopontine angle tumours.¹¹

Among these cerebellopontine angle tumours epidermoid was the most common causing trigeminal neuralgia accounting for 7.4% of patients, which closely coincides with the study of Barker FG *et al*¹², who showed in his study that incidence of cerebellopontine angle epidermoid in trigeminal neuralgia is 0.2–5.5 %. Kobata *et al*¹³ documented in his study that incidence of trigeminal neuralgia in cerebellopontine angle tumours is 90.6%, while our study showed it to be 75%.

Kato *et al*¹⁴ documented that small size epidermoids found in cerebellopontine angle were attached to trigeminal nerve in the patients who presented with trigeminal neuralgia, tumour more than 3cm compress the brain stem and extends into pre-pontine cistern compressing upon the lower cranial nerves which suggest that epidermoids located in cerebellopontine angle region originated from dura matter around trigeminal nerve and extends into the surrounding cisterns which explains that cerebellopontine angle epidermoids presents with trigeminal neuralgia. In our study classical trigeminal neuralgia could not be differentiated clinically from trigeminal neuralgia due to cerebellopontine angle epidermoid except the presentation of patients with trigeminal neuralgia due to cerebellopontine angle epidermoid at a younger age in contrast to classical trigeminal neuralgia due to other causes and this can be explained by the slow growth of the epidermoid.⁶

Meningiomas and Acoustic Neuromas are rare causes of trigeminal neuralgia but according to multiple studies by different authors that fascial pain may be present in more than 35% of patients with cerebellopontine angle meningiomas and up to 10% of patients with acoustic neuromas.^{15,16} While our study showed that frequency of cerebellopontine meningioma and neuroma was 1.4%.

CONCLUSION

Although frequency of cerebellopontine angle tumours in patients presenting with trigeminal neuralgia is low, but it can be a typical symptoms in patients with cerebellopontine angle tumours like epidermoids. So detailed clinical and radiological assessment should be done especially in young patients presenting with trigeminal neuralgia.

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