

# Contralateral blink reflex abnormality in right trigeminal neuralgia: A case report

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## Abstract

Trigeminal neuralgia can be a manifestation of contralateral cerebellopontine angle tumor. We report here a 34 year old female patient who presented with right sided facial pain in first and second division of right trigeminal nerve but her blink reflex was abnormal on the left side. Her brain MRI revealed a left cerebellopontine angle tumor displacing the pons as well as the basilar artery. The distortion and displacement of brainstem and the basilar artery contribute to the genesis of the trigeminal neuralgia contralaterally.

**Keywords:** Contralateral trigeminal neuralgia, cerebellopontine angle tumor, blink reflex

## INTRODUCTION

Trigeminal neuralgia has been described since ancient Roman and Greek times with varied etiologies like arterial compression, mass effect by tumor on the ipsilateral fifth cranial nerve root.<sup>1</sup> Tumors displacing the brainstem thereby compressing the contralateral trigeminal nerve in Meckel's cave, distortions and angulations of the nerve roots are the causes of contralateral trigeminal neuralgia with ipsilateral cerebellopontine angle tumor.<sup>2-4</sup> Blink reflex is helpful in ascertaining the localisation of the site of brainstem compression at pons. We describe a patient who presented with right trigeminal neuralgia with abnormal contralateral blink reflex and contralateral cerebellopontine angle tumor.

## CASE REPORT

A non-hypertensive female, aged 34 years, presented to us with history of recurrent brief episodes of electric shock like pains in the distribution of the first and second division of right trigeminal nerve for previous one year. Her medical history was unremarkable. General and detailed neurological examination was normal including optic fundi, facial sensations, corneal reflex and hearing. She underwent electrophysiological blink reflex and MR angiography brain.

Unexpectedly, the blink reflex revealed left sided (contralateral to the symptomatic side)

delayed ipsilateral R1, R2 and contralateral R2 while the right sided (symptomatic side) ipsilateral R1, R2 and contralateral R2 were normal (Figure 1). Furthermore, the MRI Angio/CT brain revealed large left sided extraaxial solid peripherally calcified space occupying lesion in the left cerebellopontine angle and ambient cistern region with minimal post contrast enhancement. This petroclival meningioma was compressing and displacing the pons anterolaterally as well as shifting the basilar artery to the contralateral side with resultant crowding of the right cerebellopontine angle (Figure 2). Patient underwent left retromastoid suboccipital craniotomy with lateral cerebellectomy and tumor excision. Post operatively there was decrease in the pain, with the blink reflex showing persisting delayed latencies on the left side attributed to surgical handling of the region (Figure 1).

## DISCUSSION

Cerebellopontine angle (CPA) tumors manifesting as contralateral trigeminal neuralgia is rare, which is attributed to various reasons like tumor displacing the brainstem, mechanical compression of the cranial nerves by the adjacent blood vessels like superior cerebellar artery, basilar artery, compression of the contralateral trigeminal nerve in Meckel's cave, distortions and angulations of the nerve roots.<sup>2-4</sup>

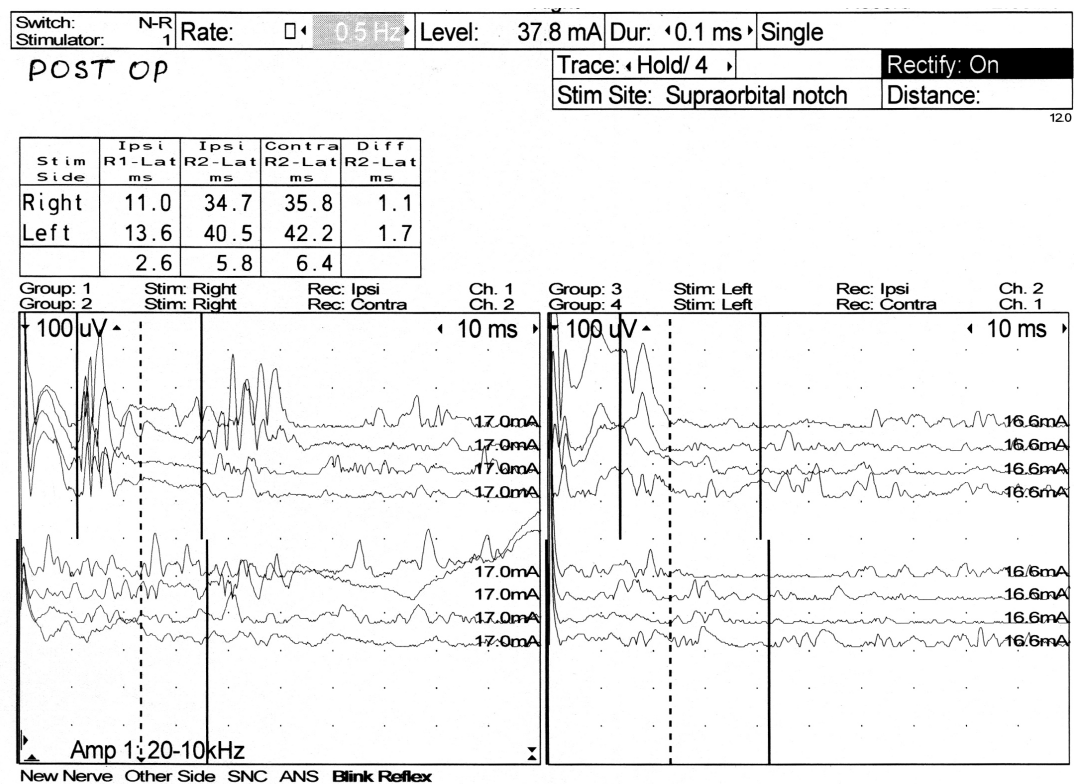
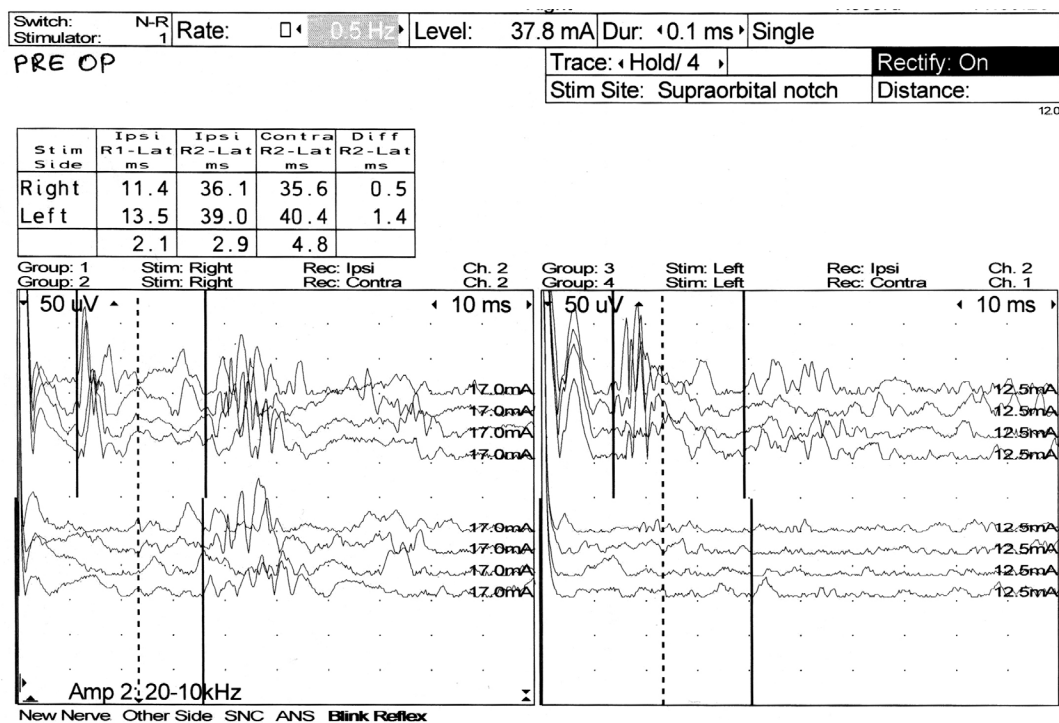


Figure 1. Blink reflex pre- and post-operation of the left cerebellopontine angle meningioma.

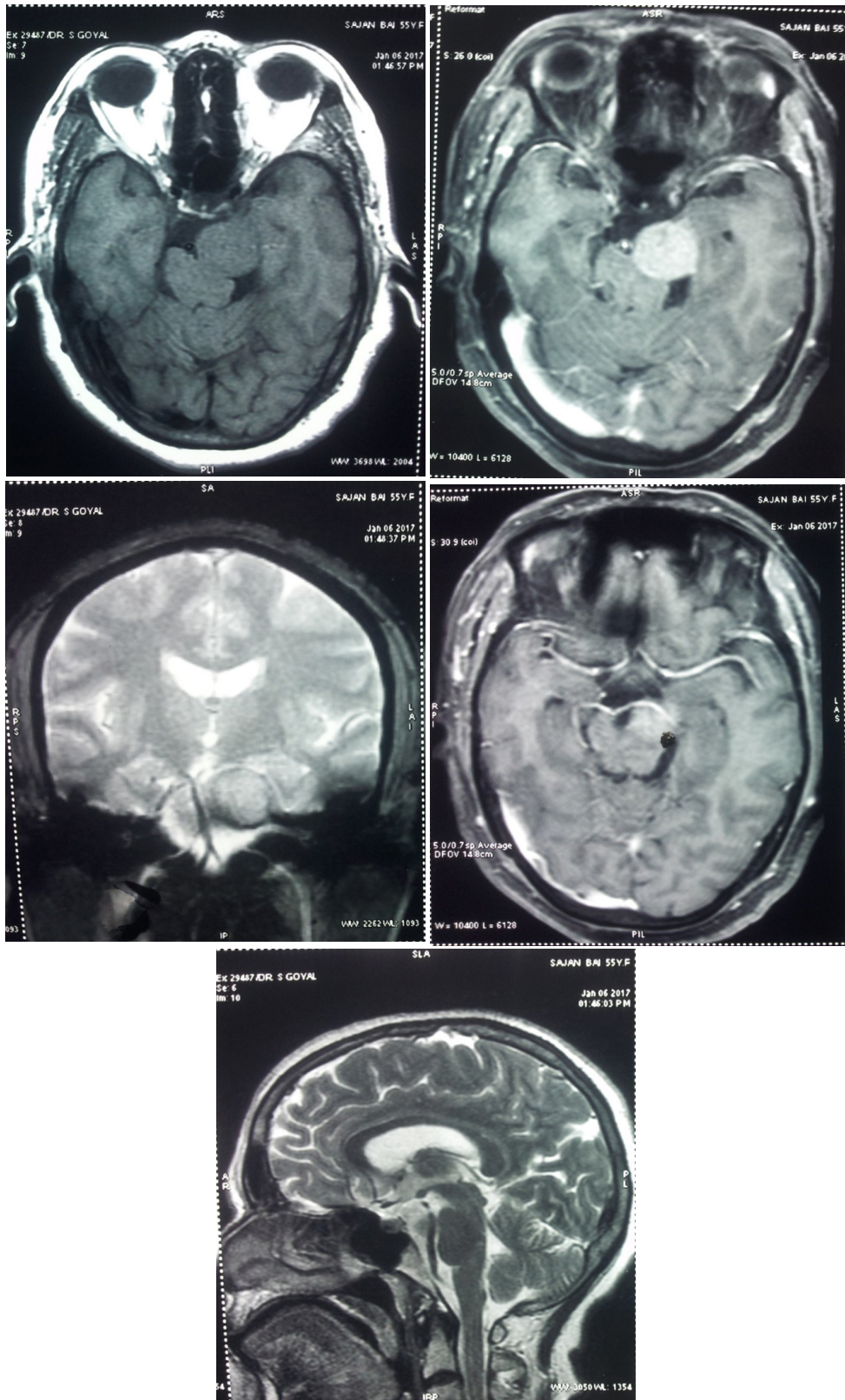


Figure 2. MRI brain showing the petroclival meningioma compressing and displacing the pons anterolaterally as well as shifting the basilar artery to the contralateral side with resultant crowding of the right cerebellopontine angle.

In our case there was gross displacement of the basilar artery as well as mechanical compression of the pons and as reported by Tomasz *et al.*, the displaced basilar artery forms an arterial loop which compresses the trigeminal nerve root, thereby producing trigeminal neuralgia.<sup>2</sup>

The R1 is a reflex pathway between the main sensory nucleus of trigeminal nerve in midpons and ipsilateral facial nucleus in the lower pontine tegmentum while the R2 is a pathway between the nucleus of the spinal tract of trigeminal nerve extending from pons to medulla and interneurons connecting ipsilateral and contralateral facial nuclei in the pons.<sup>5</sup>

CPA tumors cause rotation of the ventral surface of the brainstem to the tumor, thereby stretching the nerve root entry zone as well as distorting the brainstem.<sup>2-4</sup> The delayed left sided ipsilateral R1, R2 and contralateral R2 can be due to the pontine distortion due to the mechanical compression by the tumor, which is evident in our case. The delay in early R1 reflex and late R2 reflex was seen in most cases with pontine lesions in the study by Kimura J.<sup>6</sup> Post surgery improvement in the blink reflex latencies proves the same.

To conclude, distortion and displacement of brainstem and the basilar artery contribute to the genesis of the trigeminal neuralgia. Blink reflex was helpful in ascertaining the localisation of the site of mechanical compression on the brainstem by CPA tumor, but not the side of the trigeminal neuralgia. Surgical removal of the tumor is the optimum treatment.

## DISCLOSURE

Financial support: None

Conflict of interest: None

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