Correlation between Sagittal Angle of the Trigeminal Nerve and the Grade of Neurovascular Conflict

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We read with interest the recent article by Branstetter et al[1] describing the sagittal angle of the trigeminal nerve at the porus trigeminus in the setting of trigeminal neuralgia (TN). The study found that a small subset of patients (17%) with TN had angles that were more acute at the entry of the ipsilateral trigeminal nerve into the Meckel cave compared with controls and the unaffected contralateral side. The authors suggested that such aberrant anatomy may be associated with symptoms and that these patients could potentially benefit from an operation other than microvascular decompression (MVD). We find this concept novel, but we also believe that the readers should take home the message presented in this article with a few important caveats.

During the past 2 decades, several studies have been published discussing the MR imaging characteristics of the trigeminal nerve and its relevance to prognostication. We now understand that neurovascular conflict is present in an overwhelming majority (95%) of patients with TN.[2] Such neurovascular conflict is routinely graded[2] in an increasing order of severity from minimal contact in grade I, to distortion in grade II, and marked indentation of the nerve in grade III. In their series of 579 patients, Sindou et al[2] found that 33.2% of patients had marked indentation (grade III) with displacement of the trigeminal nerve; in other words, the affected nerves showed an altered course in one-third of patients. Furthermore, Leal et al[3] studied the impact of nerve atrophy and grades of conflict on clinical outcomes after MVD. They found that patients with higher grades of neurovascular conflict had a statistically significant response to MVD.[3] All patients with grade III conflict in their study benefited from an operation; more important, none of the patients with persistent or recurrent symptoms had a grade III conflict. The authors thus concluded that MVD is the best treatment for patients with grade II and III neurovascular conflict; in other words, MVD is the best treatment for patients with an altered course of the affected trigeminal nerve.[3]

The present study by Branstetter et al[1] does not provide the grade of neurovascular conflict in the 17% of patients showing smaller angles at the Meckel cave. It is entirely plausible that all patients with smaller angles had grade II or III neurovascular conflict. Also, it is highly improbable that nerves with a smaller angle of entry showed a completely normal course and absent neurovascular conflict. Thus, we believe that this missing information about the grade of neurovascular conflict has a potential bearing on the measured angle and is therefore vital to any inference that one may draw from the study (Figure).

Last, the authors suggest that patients with an aberrant course of the nerve may potentially benefit from a different surgical procedure than MVD. This suggestion, if true, would be in contradiction

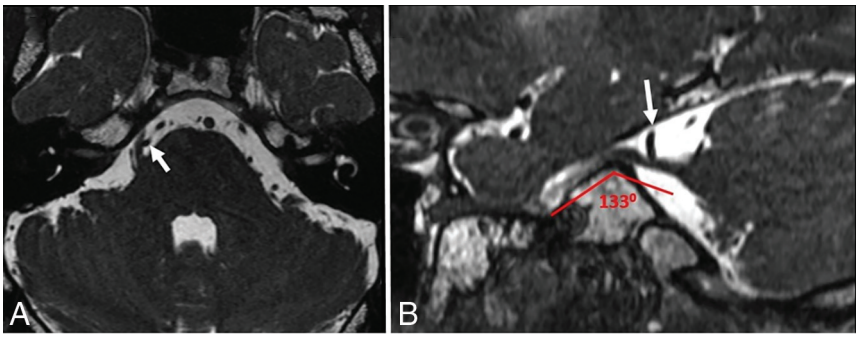

FIGURE. Sample measurement of the sagittal angle of the trigeminal nerve at the porus trigeminus (SATNaPT) in a 53-year-old man with right TN. *A*, Axial steady-state free precession (SSFP) MR image shows indentation and displacement of right trigeminal nerve (grade III) by the right superior cerebellar artery (*white arrow*). *B*, Sagittal SSFP image shows a SATNaPT of 133° with indentation on the right trigeminal nerve by the right superior cerebellar artery (*white arrow*).

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to other larger and prospective studies such as by Leal et al,[3] showing a statistically significant response to the exact same procedure in a similar cohort of patients.

Disclosure forms provided by the authors are available with the full text and PDF of this article at www.ajnr.org.

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