



Assessment of peduncular vascular compression in Parkinson's Disease

Mark Mahan MD; Francisco A. Ponce MD; Andrew G. Shetter MD; Peter Nakaji

Barrow Neurological Institute



Introduction

It has been recently reported that vascular compression of the cerebral peduncle may underlie the etiology of Parkinson’s Disease (PD) [1]. We have begun a review of high-resolution magnetic resonance images of patients with idiopathic PD to assess for vascular compression syndromes that might contribute to the pathogenesis of PD.

We anticipate this leading to a retrospective case-control series to define a possible predictive value if any correlation is found.

Methods

An initial 10 individuals with idiopathic PD who had undergone high-resolution magnetic resonance imaging (MRI) of the brain were retrospectively analyzed for evidence of vascular compression at either cerebral peduncle.

The MRI review was completed with a senior radiologist in a blinded fashion.

Results

In the initial 10 patients reviewed, 4 individuals had completely normal vasculature.

Six individuals had vascular contact with the brainstem. All cases of contact were assessed to be of minimal compression. This was determined subjectively by evaluation of neural tissue distortion, position eccentric to midline, apparent surface area of contact, among other evidence. One had minimal contact with the right pons. Three had bilateral midbrain (2 Right> Left and 1 Left > Right) contact. One had mild left midbrain and 1 very subtle right midbrain compression.

The clinical symptoms in the 5 patients that lateralized by imaging to left or right did not correlate well with the side of brainstem compression. The clinical symptoms correlated with the side of brainstem compression in 2 subjects and did not correlate in 3 subjects.

To date, we have found no cases of vascular compression of the cerebral peduncle in PD.

Conclusions

Based on our initial review of MR imaging of individuals with idiopathic PD, there is little evidence to suggest that vascular compression contributed to their disease.

We anticipate completing review of more patients in a case-control series to further assess evidence of vascular compression in PD. In particular, review of younger, unilateral onset cases is pending.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) evaluate the evidence indicating a compressive, vascular etiology for Parkinson's Disease 2) consider the role of microvascular decompression as surgery to treatment for PD.

References

(1)JANNETTA, P., WHITING, D., FLETCHER, L., HOBBS, J., BRILLMAN, J., QUIGLEY, M., FUKUI, M., WILLIAMS, R.. Parkinson’s disease: an inquiry into the etiology and treatment. Neurology International, North America, 3, Aug. 2011