Neurovascular Compression at the Medulla Oblongata and Hypertension: MR Evaluation and Classification

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Purpose
To investigate the association between primary arterial hypertension and signs of neurovascular compression at the ventrolateral medulla oblongata on MR imaging and propose a new classification.

Materials & Methods
Two groups were evaluated: 32 patients with severe essential hypertension (43.5 ± 4.9 years of age) and 10 normotensive patients (38.5 ± 6.4 years of age). The previous exposure to hypertension was 9.5 ± 6.3 years, and the average systolic and diastolic pressures were 205 ± 31.8 and 130 ± 19.3 mmHg. Thin slices on T2-weighted were done in axial and coronal in the brain stem, and the relationships between the upper medulla and the surrounding arteries were studied. The findings were classified into 4 categories: a) no sign of compression; b) vascular contact without evident compression; c) evident compression; d) anatomical distortion, suggesting compression but without a vascular image.

Results
The primary hypertension group showed vascular contact in 11 cases (34.4%), evident compression in 7 cases (21.9%), anatomical distortion in 1 case (3.1%), and no signs of neurovascular compression in 13 cases (40.7%). Compression was bilateral in 2, on the left side in 3, and on the right in 2 cases. Contact was bilateral in one, on the left side in 6, and on the right in 4 cases. The control group showed 1 case (10%) with vascular contact, 1 with compression (10%), 8 without any sign of compression (80%), and no case of anatomical distortion.

Conclusion
Our results show an evident association between primary arterial hypertension and signs of medullary compression on MR imaging, thus corroborating results of other series. We believe that the classification proposed may provide a semiquantitative method to describe the anatomy of neurovascular compression, thus improving the diagnostic sensibility.

References