Clinical-angiographic correlations in 132 patients with megadolichovertebrobasilar anomaly

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Summary. We have found numerous case reports, but no systematic study of the megadolichovertebrobasilar anomaly (MDVBA). The purpose of this paper is to evaluate the relationships between arterial shifts of the vertebro-basilar system and neurological findings in the posteriors fossa in our series of 132 cases. We found a high percentage (77.3%) of angiographic-clinical correlations having evaluated the arterial shifts, measured in mm, of the vertebro-basilar system in a frontal and a sagittal plane and concluded that the greater the degree of dislocation, the greater the number of positive cases. Nevertheless it is not possible to predetermine the presence of particular neurosymptomatology related to arterial dislocation degrees.

Key words: Megadolichovertebrobasilar anomaly – neuro-vascular compression – hemifacial spasm – cranial nerve pathology – cerebello-pontine angle syndrome

Many cases of neuro-vascular compression of the posterior fossa are reported: these are cases of aneurysmal malformation or anomalies of caliber or length of the vertebro-basilar arteries.

The first reports were based on surgical findings [9, 12, 20, 35, 49].

In more recent studies an anatomo-clinical ratio between vascular anomalies of the posterior fossa and neurological findings has been aimed at.

Apart from cases of aneurysm of the vertebro-basilar arteries [10, 28, 29, 37, 43, 47, 50], the elongation and tortuosity of the vertebro-basilar system and its branches is frequently mentioned in the literature as a cause of involvement of the posterior fossa nervous system [1, 4, 18, 33, 40, 46].

Hemifacial spasm or 7th nerve paresis due to a megadolichovertebrobasilar artery (MDVBA) is a frequent angiographic and surgical finding [6, 7, 8, 11, 16, 17, 19, 24, 25, 27, 30, 34, 36, 37, 44].

Cases of nerve entrapment by ectatic and tortuous vessels in the MDVBA have also been surgically ascertained also in patients suffering from trigeminal neuralgia [15, 22, 23, 26, 30, 31, 42, 44].

There are, in addition, many cases of cerebello-pontine angle syndrome where, when the presence of a neoplastic pathology has been excluded, it is possible to ascertain the vascular cause [2, 3, 14, 32, 38].

The introduction of CT came as an additional contribution in the diagnosis of these vascular anomalies [13, 39, 41].

A vascular anomaly of the vertebro-basilar system dislocated in the cranial direction, pressing on the third ventricle can cause a triventricular hydrocephalus, as has been documented in the past be pneumoencephalography and, more recently, by CT examination [5–21, 45, 48].

Though the cases reported in the literature are numerous they are, for the most part, sporadic observations.

The purpose of this paper is to verify the angiographic correlations in 132 patients with MDVBA and to look for the relationships between the degree of the vascular shifts and individual clinical manifestations.

Materials and methods

2,265 vertebral angiographies were examined and, of these, 132 cases (5.8%) in which MDVBA had been diagnosed, were selected.

A study of X-ray angiographies of the cases was carried out in both straight anteroposterior and lat-
For that we used the prolonged line of the plane of the anterior cranial fossa through the anterior clinoid process (Fig. 1b).

All patients were evaluated regarding neurological signs involving the posterior fossa.

Finally in 19 selected patients a CT examination with an Acta scanner 200 FS, Pfizer M.S., matrix H256, Kv 120, MA 28, was carried out.

### Results

In 30 of our 132 cases we found no relationship between the vertebro-basilar system and the neurological symptomatology. In the remaining 102 cases the connection between arterial dislocation and clinical findings was evident.

The vascular segment most frequently dislocated, on a frontal plane, was the distal part of the vertebral artery; either isolated (32%) or in association with the inferior part of the basilar artery (32%); in 21% of the cases the B1 part of the basilar artery was dislocated separately, less frequently the dislocation of the PICA (9%) was found (Table 1).

The 102 cases, angiographically and clinically positive, were then divided according to the symptomatology in 6 homogeneous groups (Table 2).

1. Pathology of the seventh cranial nerve (hemifacial spasm or paresis);