Although Duret² and Stopford³ held that the basilar artery supplied the paramedian midbrain including the oculomotor nucleus, it is clear that other early workers were not in agreement.⁴ The important work of Khan⁵ established that the majority of the paramedian midbrain is supplied by the posterior cerebral arteries, and only the ventrocaudal midbrain is supplied directly from the basilar artery. His findings were confirmed in Duvernoy's⁶ extensive study of brainstem vasculature.

Khan divided the paramedian supply to the midbrain into three groups: cranial, intermediate, and caudal. The cranial group of arteries arises from the posterior communicating artery and mainly supplies the thalamus and hypothalamus; the intermediate group arises from the posterior cerebral and collicular arteries and supplies the midbrain and diencephalon; and the caudal group of arteries are branches of the basilar and superior cerebellar arteries, which penetrate the interpeduncular fossa caudal to the level of the oculomotor nucleus.⁵ Within the brainstem, the long central rami of the caudal group run dorso-caudally and supply the dorsal part of the upper pons. The shorter central rami of the caudal group supply caudal levels of the midbrain including the medial margin of the cerebral peduncles, the medial part of the substantia nigra, and the medial part of the tegmentum ventral to the medial longitudinal fasciculus. Duvernoy⁶ reported that the superior anteromedial (paramedian) branches of the basilar artery are small and supply the pontine tegmentum, although some branches reach the cerebral peduncles.

Secondly, the templates of Bogousslavsky et al show a radial pattern of arterial territories centered at the aqueduct similar to the descriptions of the midbrain territories by Foix and Hillemand⁷ and Lazorthes.⁸ Khan and Duvernoy^{5,6} have shown that although this arrangement pertains at a caudal midbrain level, more rostrally, the anterolateral midbrain territory (the supply to the cerebral peduncles) extends only as far as the lateral part of the red nucleus but does not reach the region of the aqueduct. The small arteries of this territory arise from the collicular, posteromedial choroidal, and posterior cerebral arteries and penetrate the cerebral peduncles. There appear to be two types of arteries in the anterolateral territory⁹: multiple small arteries that terminate within the substantia nigra, and longer arteries that go beyond the substantia nigra and supply the lateral tegmentum. The region of the substantia nigra thus appears to be a borderzone between short lateral penetrators

and longer paramedian penetrators, and this might explain the topography of the infarct in patient 19 of Bogousslavsky et al.

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Reply from the Author: We fully agree with the concept that as we progress rostrally in the upper midbrain, the blood supply from the posterior cerebral artery increases, while that from the basilar artery decreases. Concerning the infarct topography in our patient 19, we have another hypothesis, based on a patient studied after our paper was published, who had a typical infarct limited to the anterior choroidal artery (AChA) territory in the internal capsule. This infarct extended caudally to the midbrain and involved exactly the territory involved in patient 19. Therefore, it seems possible that in some instances, the involvement of midbrain branches of the AChA may lead to the type of infarct demonstrated by patient 19, without borderzone ischemia.

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Correction

In "Symptomatic cataplexy in pontomedullary lesions" by D'Cruz et al, which appeared in the November 1994 issue (*Neurology* 1994;44:2189-2191), a sentence appeared incorrectly in the third paragraph of the Discussion section. It read as follows: "Carbamazepine may increase frequency of cataplectic spells." It should have read, "Phenytoin and valproic acid may increase frequency of cataplectic spells."

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Correction

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