

# Pitfalls in vascular imaging when brain death is suspected: multiparametric multidetector computed tomography as a complementary diagnostic tool

Armadilhas em imagem vascular na suspeita de morte encefálica: tomografia computadorizada multidetectores como uma ferramenta diagnóstica complementar

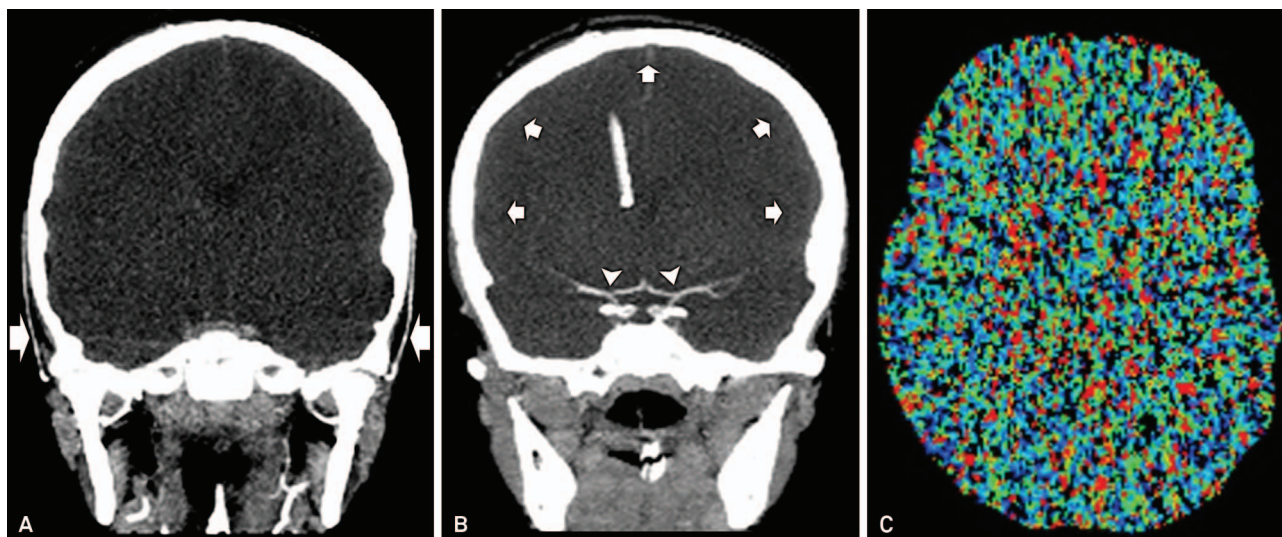
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Although multidetector computed tomography (MDCT) has not yet been adopted to confirm brain death in Brazil, international reports support the use of multiparametric techniques to properly evaluate the circulation of the brain<sup>1</sup>.

Proposed MDCT protocol consists of two acquisitions to assess the arterial and venous phases of brain circulation. The complete absence of intracranial vascular enhancement supports the diagnosis of brain death. However, delayed,

weak and persistent opacification of the proximal segments of the cerebral arteries, termed "stasis filling," indicates the inability to perform brain perfusion and should be recognized as an important pitfall when computed tomography angiography (CTA) is analyzed<sup>2,3</sup>.

Computed tomography perfusion (CTP) is reliable in demonstrating the absence of brain perfusion and thereby confirming severe hemodynamic arrest<sup>4,5</sup> (Figure).



**Figure.** Multiparametric multidetector computed tomography of a 7-year-old boy with increased intracranial pressure following an intracranial hemorrhage (not shown) in the setting of acute lymphoblastic leukemia. A coronal reformatted image acquired in the first acquisition of CTA showed absent contrast opacification of the intracranial arteries (A). Note the extracranial arteries (arrows). The second acquisition showed "stasis filling" (arrowheads) of enhanced proximal cerebral arteries (B). Note the absence of contrast in the cortical vessels and venous drainage (arrows). The superior ophthalmic veins were ectatic (not shown). Microvascular evaluation by CTP revealed the absence of cerebral blood flow (C) and cerebral blood volume (not shown) in this patient, who was later confirmed to be brain dead according to Brazilian technical and legal determinations.

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