

Ischemia in children deserves some specific considerations. It is not as rare as it is commonly thought (Barnes et al. 2004; Amlie-Lefond et al. 2008, 2009) with a frequency reported to be 2–6/100,000 children per year. Unlike in adults, it is rarely linked to factors related to atherosclerosis. Instead, it is associated with a variety of pathological processes, including cardiac diseases and other nonatherosclerotic arteriopathies which are listed in Table 17.1 (Chap. 17). In some cases, a precise etiology can be identified; in many others, however, it may only be suspected or remain unknown (Barnes et al. 2004; Jones et al. 2010).

Among the most frequent causes are infections, especially of the upper respiratory tract, and hematological diseases. Arteritis due to a previous varicella zoster infection can occur (Sebire et al. 1999; Barnes et al. 2004; Lauthier et al. 2005; Miravet et al. 2007; Jones et al. 2010). Primary cerebral angiitis has been emphasized by some authors (Elbers and Benseler 2008; Hajj-Ali and Calabrese 2009). Stroke occurs frequently in sickle cell disease (Jones et al. 2010). This is due to the altered red blood cells causing an endothelia damage leading to an intimal hyperplasia and a progressive narrowing of the

lumen of the artery. Among the intracranial vessels, the supraclinoid internal carotid artery is the most frequently involved. Furthermore, MR studies (Pegelow et al. 2002; Stem et al. 2003) in children with sickle cell disease have shown with a high frequency asymptomatic microischemic lesions in the white matter of the cerebral hemispheres indicating an involvement also of the deep and superficial perforators.

Many pathological conditions altering the blood coagulation (see Table 17.1) can be the cause of stroke in adults. The same can occur, even if more rarely, in childhood (Barnes and Deveber 2006). Among other pathologies, spontaneous dissection is another increasingly recognized cause of stroke in children (Schievink et al. 1994a; Fullerton et al. 2001; Rafay et al. 2006) (see also Sect. 16.7). As far as it concerns the Moyamoya disease, see Sect. 17.3.

The ischemia and vessel lesions in the form of stenosis or occlusion can be often diagnosed on CT and MRI as well as CT and MRI angiography. For a more detailed diagnosis, angiography remains the examination of choice. Control studies can show normalization of the vessels involved. Examples are represented in Figs. 16.11, 17.2, and 17.3.