CT and MR imaging of primary cerebrovascular complications in pediatric head trauma.

Abstract:
The incidence of severe traumatic head injury in children has constantly increased over the last years. Diagnostic imaging has become an unrenounceable tool for the documentation and follow-up of intracranial lesions. The use of magnetic resonance imaging (MRI) in the early posttraumatic phase has led to a more thorough understanding of intracranial injuries. We retrospectively analyzed the cranial computed tomography (CCT) and magnetic resonance (MR)-studies of patients with traumatic head injuries for primary cerebrovascular complications. In 64 children (45 male, 19 female) with traumatic head injuries, CCT and MR examinations were available for analysis. The children's age ranged from 3 months to 15 years with a median age of 7 years. All patients had initial CCT on admission to the hospital with follow-up examinations depending on clinical state and initial imaging findings. All patients had at least one MR examination between 0 to 120 days after the trauma with a median time interval of 17 days. In five of 64 (7.8%) patients, cerebrovascular complications were found on imaging studies. Initial imaging within the first 24 h after the trauma detected a complete middle cerebral artery infarction in one patient and extensive sinus thrombosis after a complex skull fracture in another. In two patients, thrombosis of the transverse sinus appeared on MRI 4 to 6 days after the trauma. In another patient with
open-skull injury, a posttraumatic aneurysm of the pericallosal artery was diagnosed on MRI 30 days after the trauma. Our study shows that, although primary cerebrovascular lesions after traumatic head injuries in children are rare, the radiologist should be aware of the characteristic injury patterns and the time appearance of imaging findings on CT and MRI.