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Coexistence of five types of intracranial hemorrhagic lesions after brain injury in a young adult

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ABSTRACT

Posttraumatic intracranial hemorrhage is an entity frequently encountered in neurosurgical daily practice. These haemorrhagic lesions are classified according to their location as: extradural haematoma, acute subdural haematoma, intraparenchymal haemorrhage, subarachnoid haemorrhage and contusion. A brain scan is the key examination for the diagnosis. The simultaneous presence of these hemorrhagic lesions in a single traumatic brain injury is rare. We are reporting an unusual case of a 24-year-old who suffered from a brain injury due to road traffic accident, and whose brain CT scan showed five types of post-traumatic intracranial lesions. He benefitted from medical treatment and neurological surveillance. The evolution was favorable with a setback of the signs of intracranial hypertension. The follow-up brain CT scan performed one month after the trauma showed a complete resorption of the lesions.

Keywords: Intracranial hemorrhagic lesions; Traumatic brain injury; Brain CT scan; Young adult

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Introduction

Intracranial hemorrhage is a common condition in neurosurgery, accounting for up to 15% of cerebrovascular accidents [1]. The mortality rate is estimated at 40% in the first month after the occurrence of the hemorrhage [1]. Traumatic brain injury is one of the most common causes of intracranial hemorrhage. The mechanism of injury is dominated by traffic accidents with direct cranial impact in young people, whereas falls or domestic accidents tend to affect older subjects [2]. Trauma can cause intracranial hemorrhage through direct or indirect injury resulting in arterial or venous bleeding around or within the cerebral parenchyma. Brain CT scan remains the key examination for assessing the extent of acute traumatic brain injury [3]. The most frequently encountered intracranial hemorrhages are: acute subdural hematoma, extradural hematoma, subarachnoid hemorrhage, hemorrhagic parenchymal contusions, and cerebral microhemorrhages due to shear injury [3]. We are reporting an unusual case of a young adult who had five types of intracranial hemorrhagic lesions on brain CT throughout a traumatic brain injury.

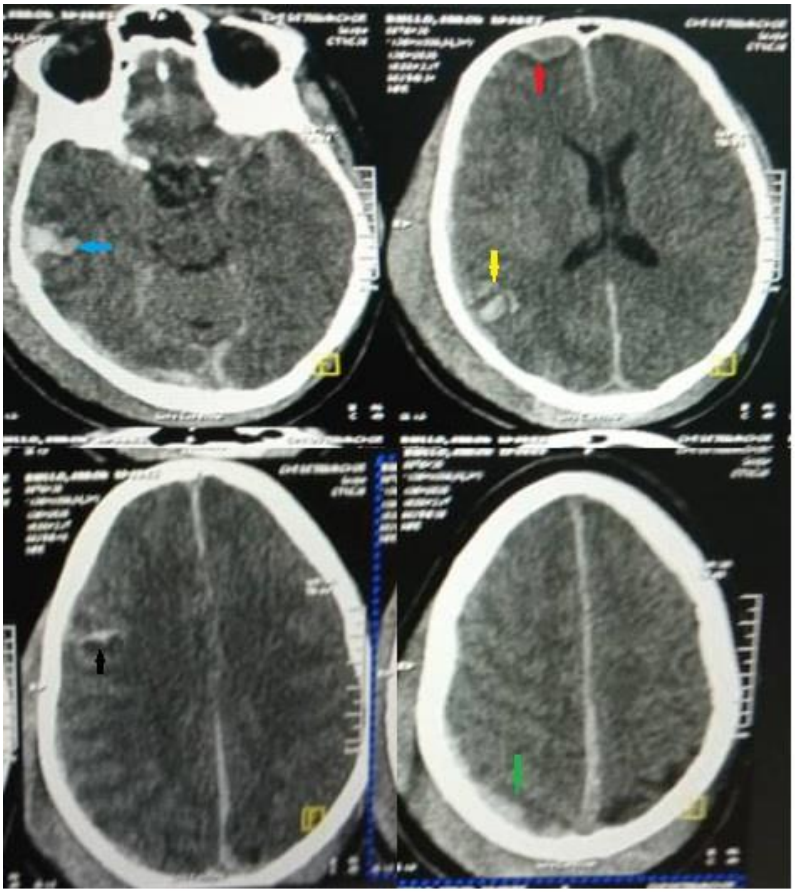

Figure 1: Brain CT Scan without injection of contrast material showing five types of posttraumatic hemorrhagic intracranial lesions: a right frontal epidural hematoma (red arrow), a subdural parieto-occipital hematoma (green arrow), an intraparenchymal hematoma (blue arrow), a right posterior parietal contusion (yellow arrow), a sub arachnoid hemorrhage (black).

Clinical case

A 24-year-old patient with no particular pathological history was admitted to the Accident and Emergency department of our structure after a traumatic brain injury due to road traffic accident. This patient was not wearing a helmet and was said to have fallen off his motorbike and hit his head. At the scene of the accident, he presented an initial loss of consciousness for approximately 5 minutes and two episodes of vomiting. He was admitted to our facility within two hours after his trauma. Clinical examination at the

entrance showed a clear consciousness with a Glasgow coma scale rated to 15, an intracranial hypertension, frontal headaches associated with vomiting and also discrete meningeal stiffness. The remainder of the clinical examination was normal. The checking up of hemostasis returned normal. Emergency Brain CT scan showed five types of posttraumatic intracranial hemorrhages: right frontal extradural hematoma (red arrow), right parieto-occipital acute subdural hematoma (green arrow), right temporal intraparenchymal hematoma (blue arrow), right posterior parietal contusion lesions (yellow arrow), and subarachnoid hemorrhage (black arrow) (Figure 1).

He benefitted from medical treatment and neurological surveillance. The evolution was favorable with an improvement of the signs of intracranial hypertension. The cerebral CT scan performed at the one-month clinical follow-up, showed total resorption of intracranial haemorrhagic lesions (figure 2).

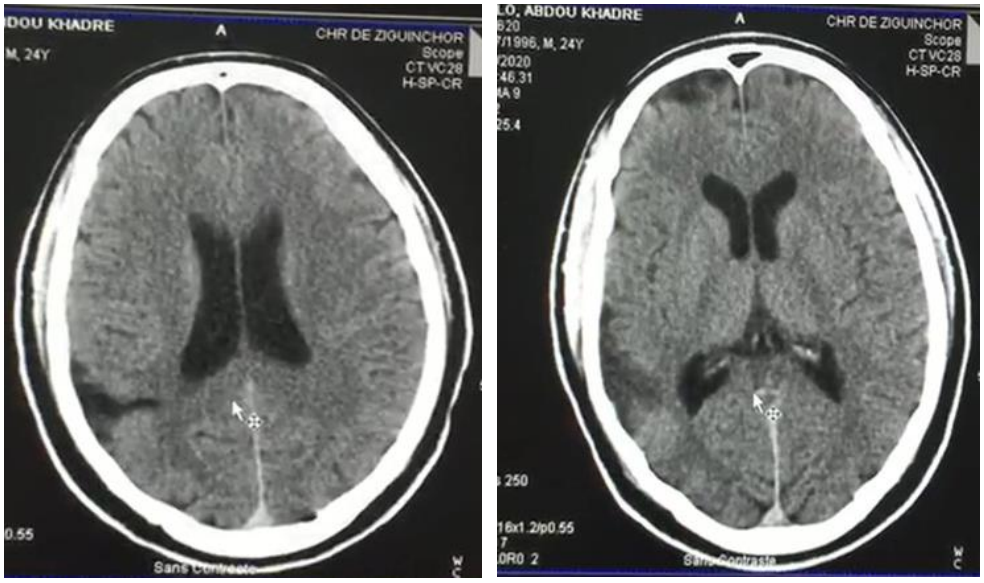

Figure 2: Follow-up Brain CT Scan at one month after trauma showing complete resorption of hemorrhagic lesions

Discussion

Intracranial hemorrhage is a common complication of traumatic brain injury. It is usually responsible AT ONCE for severe disorders of consciousness associated with acute intracranial hypertension [4]. In a large study about patients with a low Glasgow Coma Scale suffering from brain injury, 46% had intracranial hemorrhage [4]. The brain CT scan is the key examination for the assessment of the injury as well as detecting signs of intracranial hypertension and urgent surgical injuries [5]. Patients with traumatic brain injury may present with different types of intracranial hemorrhagic lesions visible on brain CT scan, the most recurring of which are acute subdural hematomas, extradural hematomas, intraparenchymal hematomas, contusions and subarachnoid hemorrhages [3]. The coexistence of these lesions throughout a single brain injury is rare in young subjects. No cases of traumatic brain injury with five types of intracranial hemorrhages on CT scan have been reported in the literature. Julian et al reported four types of posttraumatic intracranial hemorrhage in a 71-year-old patient [6]. Multiple posttraumatic intracranial hemorrhages are more frequently found in subjects over 50 years of age [1]. In our patient, the coexistence of these lesions would be due to the violence of the shock with direct impact on the skull. The site of acute post-traumatic intracranial hemorrhage depends on the injured vessel and tissue architecture [6]. The small volume of

epidural hematoma in our patient was probably due to either diploid or epidural venous bleeding. Acute subdural hematoma is usually due to the cerebral tremor involved in the acceleration-deceleration phenomenon which causes a vein from the surface of the brain to be torn. Acute subdural hematoma is often associated with cortical contusion subsequent to vascular crushing, as in our patient [7]. These contusions may become extensive and constitute a compressive intracranial hematoma. Trauma is the most common cause of subarachnoid hemorrhage, which caused intense headaches and meningeal syndrome in our patient. The clinical description is extremely polymorphic with, however, impaired consciousness and localizing signs more frequently.

Conclusion

A better understanding of the mechanisms of injury and better visualization of the lesions are essential criteria for a better understanding of trauma. Posttraumatic hemorrhagic lesions are the most easily recognizable on brain scans. Their coexistence on brain scan is a rare occurrence. They are the basis of today's major surgical or medical treatment decisions.

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Conflicts of Interest: On behalf of all author, the corresponding author states that there is no conflict of interest

References

[1] Van Asch CJ, Luitse MJ, Rinkel GJ, van der Tweel I, Algra A, Klijn CJ. Incidence, case fatality, and functional outcome of intracerebral haemorrhage over time, according to age, sex, and ethnic origin: a systematic review and meta-analysis. Lancet Neurol. 2010; 9:167–176.

[2] Mathe JF, Richard I, Rome J. Serious brain injury and public health, epidemiologic and financial considerations, comprehensive management and care. Ann Fr Anesth Reanim 2005; 24: 688-94

[3] Shetty VS, Reis MN, Aulino JM, Berger KL, Broder J et al. ACR appropriateness criteria head trauma. J Am Coll Radiol. 2016; 13:668–679.

[4] Perel P, Roberts I, Bouamra O, Woodford M, Mooney J et al. Intracranial bleeding in patients with traumatic brain injury: a prognostic study. BMC Emerg Med 2009; 9:15.

[5] Grondard E., Martin C. Atteintes neuro-orthopédiques graves du cérébro-lésion acquis. Kinesth. Scientifique, 1995, 348: 6-21.

[6] Mattiello JA, Munz M: Images in clinical medicine: Four types of acute post-traumatic intracranial hemorrhage. N Engl J Med 2001; 344:580.

[7] Glastonbury CM, Gean AD. Current neuroimaging of head injury. Semin Neurosurg 2003;14:79-88.