

Transorbital penetrating wound to contralateral hemisphere: case report

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ABSTRACT

There are few reports in the literature of transorbital penetration brain damage. We reported a transorbital craniocerebral injury caused by a barbecue skewer in a child in the context of domestic-accident. A 7-year-old male child accidentally fell and a barbecue skewer penetrated his right orbit. The object was pulled out immediately by the boy's father. On admission, he demonstrated disproportioned right hemiparesis and Axial CT images showed no evidence of fracture of orbital wall on the right side and a small hematoma and traumatic subarachnoid hemorrhage on the left hemisphere. Surgery was not indicated, antibiotics were administered for 14 days, his neurological impairment recovered completely on seven days. On the 12th post-admission day, a CT was done which showed no hematoma. At the time of discharge, the boy was alert without any physical sequelae or complication. Children are frequently harmed during play and are mainly jeopardized by accidents at home, and it is necessary more governmental investment to objectively lowering penetrating wounds to the head in children and divulgated for general population that foreign body penetrating the intracranial cavity must be removed only during surgery.

KEYWORDS

Accident prevention, child, foreign bodies, craniocerebral trauma, home accidents, wounds penetrating.

RESUMO

Ferimento penetrante transorbital com lesão no hemisfério contralateral: relato de caso
Existem na literatura poucos relatos de traumatismo cranioencefálico causados por penetração transorbital. Será descrito o caso de uma criança do sexo masculino, de 7 anos de idade, que caiu acidentalmente em casa e um espeto de churrasco penetrou na sua órbita direita. O objeto foi imediatamente retirado pelo pai. Na admissão ao Hospital, a criança apresentava-se com hemiparesia direita desproporcionada e na tomografia de crânio evidenciavam-se contusão cerebral e hemorragia subaracnoide traumática no hemisfério esquerdo, entretanto não havia sinais de fraturas. Não foi necessário procedimento cirúrgico, e o menor permaneceu internado para administração de antibióticos por 14 dias, obtendo melhora do déficit após sete dias do internamento. Com 12 dias de hospitalização, foi realizada nova tomografia, sem evidências de hematomas. Na alta, ele encontrava-se ativo, alerta e sem déficits motores. Crianças são frequentemente feridas durante jogos e brincadeiras, e esses acidentes acontecem principalmente no ambiente doméstico. Torna-se necessário maior investimento governamental para diminuir ferimentos penetrantes em crianças e divulgação, para a população em geral, sobre acidentes com penetração craniana, que devem ser encaminhados imediatamente ao hospital, devendo os objetos ser removidos somente durante o procedimento cirúrgico.

PALAVRAS-CHAVE

Prevenção de acidentes, criança, corpos estranhos, traumatismos cranioencefalos, acidentes domésticos, ferimentos penetrantes.

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Introduction

Transorbital penetration brain damage is a very rare event, and there are few reports in the literature. It is frequently described that non-projectile penetrating traumatic brain injuries due to unusual foreign bodies entering the brain via the orbit do not occur very frequently.¹ Children are most often endangered by domestic accident head injuries while playing with the sharp objects. This is the first report describing a transorbital craniocerebral injury caused by a barbecue skewer in whom there was the removal of the foreign body by the family on the site under no control.

Case report

A 7-year-old male child accidentally fell in the kitchen and a barbecue skewer, that was leaning on the wall, penetrated his right orbit. The barbecue skewer was pulled out immediately on scene by the boy's father.

This boy was transferred to Children's Emergency of our hospital as the parents called an ambulance. On admission, he was conscious with Glasgow Coma Scale (GCS) score 15, although he demonstrated disproportionate right hemiparesis, with normal bilateral pupil reaction. The physical examination revealed a small punctured wound on the right eyelid, with a light periorbital swelling, and in the frontal region with no penetration (Figure 1A).

After the admission examination was completed, initial plain skull X-rays were requested and reported to be normal (Figure 1B). Axial computerized tomography (CT) scan images showed that the barbecue skewer had probably crossed transorbitaly, with no evidence of fracture of orbital wall on the right side and had extended to the left hemisphere crossing the left internal capsule where a small hematoma and traumatic subarachnoid hemorrhage (Figure 2) exists.

Surgery was not indicated, the boy was admitted without necessity of Intensive Care Unit (ICU), and antibiotics were administered for 14 days, with no sign of infection on the cerebrospinal fluid. The following course was uneventful, his neurological impairment recovered completely on seven days. On the 12th post-admission day, he had a CT scan done which showed no hematoma (Figure 3). At the time of discharge, the boy was alert without any physical sequelae, no sign of cerebrospinal fluid leakage, meningitis or abscess. The sight had been not affected and ocular movements were preserved (Figure 4).

The patient's parents authorized the authors the utilization of these records by informed consent to be published.

Discussion

The group of wounds caused by knives, nails, spikes, forks, scissors, screwdrivers and other assorted objects represent a smaller fraction of penetrating wounds to the head (PWH),² and there is no relate in the literature of wound caused by barbecue skewer. Unusual PWH, most commonly, occur through the thin bones of the skull, especially in the squamous portion of the temporal and orbital surfaces,² as demonstrated by our case.

Penetrating orbitocranial injury may result in ocular and cerebral injuries. There are describe in the literature: extra ocular muscle dysfunction, optic neuropathy, cerebrovascular injuries, intracerebral hematoma and intraventricular hemorrhage, some of them may require emergent intervention to prevent neurological sequelae.^{3,4} It is necessary to take into account the risk of persistent cerebrospinal fluid leakage, the most serious complications of orbital penetrating trauma, and late infective complications (orbital cellulitis, orbital and cerebral abscess, encephalitis and tetanus).^{5,6} Unless a foreign particle in the orbit is visualized in anatomical and radiological detail, no surgical intervention is recommended for removal.^{5,7,8}

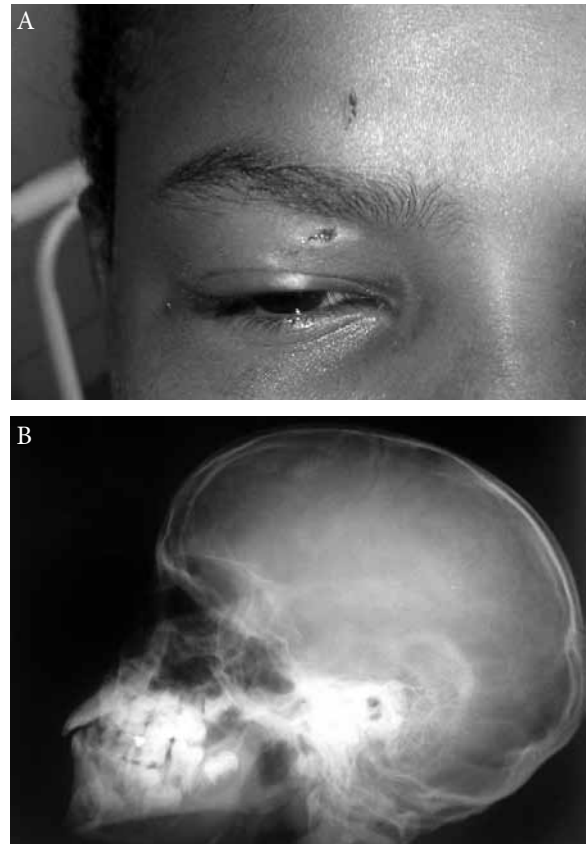


Figure 1 – Initial admission exam. (A) Physical examination demonstrated a small wound on the right eyelid and in the frontal region, with a light periorbital swelling. (B) Admission plain skull X-rays revealed absence of fracture.

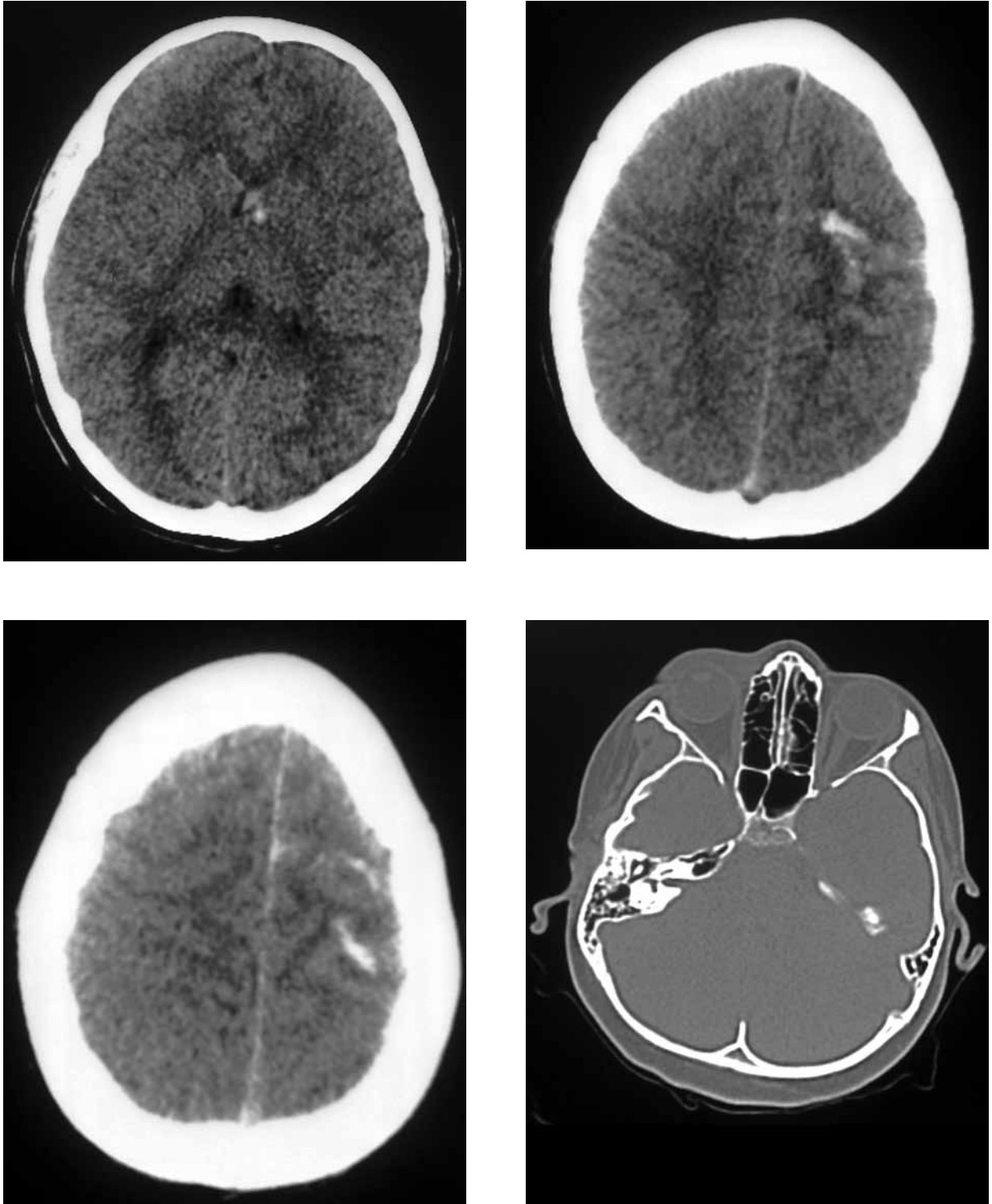


Figure 2 - Axial computerized tomography revealed the presence of a small hematoma and traumatic subarachnoid hemorrhage on the left hemisphere and no evidence of fracture of orbital wall on the right side.

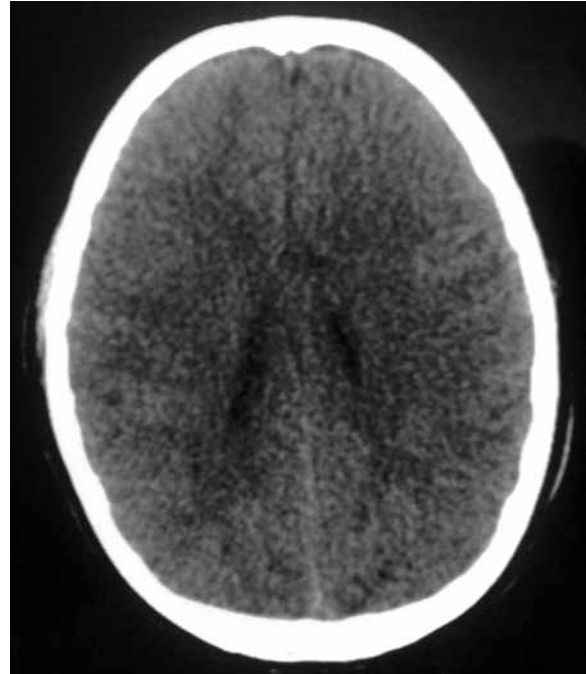
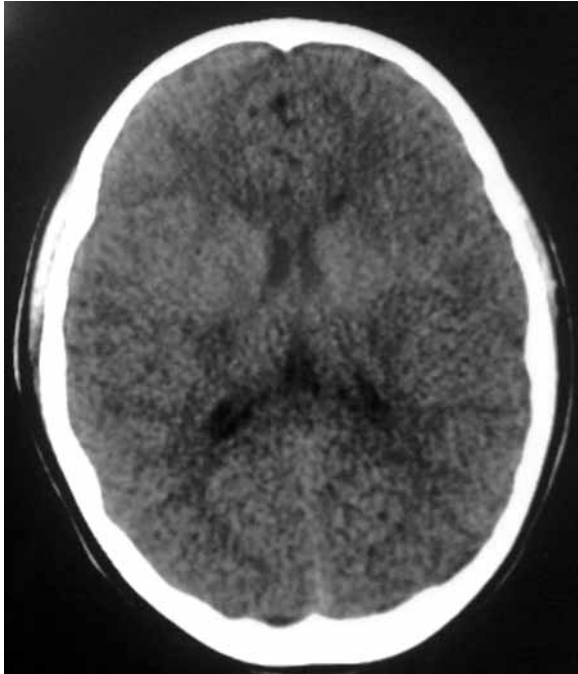


Figure 3 - Control axial computerized tomography showing completed absorption of the hematoma and no subarachnoid hemorrhage.



Figure 4 - Normal ocular movements and the wound cicatrization at discharge.

The foreign body penetrating the intracranial cavity must be removed only during surgery. It is very important to prevent involuntary movements otherwise it can enlarge the damaged area.^{9,10} We recently publicated a case of penetrating screwdriver wounds to the head¹¹ and describe the surgery and a review of the literature. According to our previous experience, on this case, we strongly recommend conservative treatment to this lesion as long as is considered to be adequated.

Children are most frequently harmed during play and are mainly jeopardized by accidents at home and the most severe ones happen in the kitchen or in the stairs.¹²

In a recent study, "Parent's adherence to children's home-accident preventive measures"¹³, demonstrates that half of the parents had inadequate adherence to the application of preventive measures for children's

accidents at home, and accident incidence was 36% lower when parents claimed to adhere to preventive measures. Therefore, we could conclude that it is very important parental adherence for decreasing home-accident events, and it is necessary more governmental investment to objectively lowering penetrating wounds to the head in children.

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