Answer

Send Serum for Coagulation Studies and Obtain Computed Tomographic Imaging of the Brain

Physical findings were consistent with a jacketed bullet lodged in the patient's skull. Cranial computed tomography confirmed the extent of penetration of an isolated missile wound to the brain (**Figure 2**). The patient received a tetanus vaccine and broad-spectrum antibiotics in the emergency department and was then taken directly to the operating room for removal of the bullet. Surgical debridement of the wound was performed under balanced general anesthesia with narcotic and muscle relaxation. Hemostasis was confirmed and the wound was closed. Postoperatively, the patient denied any symptoms related to the event and demonstrated no evidence of sequelae from the trauma. The patient was discharged from the hospital on postoperative day 2 for a period of convalescence. Phenytoin was prescribed for 7 days and then discontinued.[1]

The optimal treatment of traumatic wounds of this nature is surgical exploration and removal in a controlled environment. The temptation to remove the foreign body immediately, without first obtaining detailed imaging, should be universally avoided as such action could result in uncontrolled hemorrhage related to manipulation of the foreign body. In this case, meticulous hemostasis was obtained with electrocautery and hemostatic agents applied to the dura. Obtaining basic laboratory tests preoperatively to assess the patient's coagulation status is prudent, especially when the patient's health history is unknown or unconfirmed. Prophylactic administration of the tetanus vaccine and perioperative antibiotics is appropriate based on the potential risk of infection.[2]

In the combat zone, penetrating missile wounds to the head are usually deliberate, not accidental, and can lead to increased mortality and morbidity.[3,4] In this particular case, the event had little to do with war and more to do with competitive sports, civic pride, and subsequent celebration. The local soccer team happened to be the Iraqi national team, playing in Baghdad. In many places around the world, the use of gunfire, often projected skyward with no intended target, is used to signal victory or other significant events.[5,6] Sir Isaac Newton and others have convinced us that objects must obey the law of gravity; unfortunately for this patient, a bullet fired in celebration is not exempt from the rule.

It is difficult to predict exactly where a fired object will return to earth. When the landing zone, particularly in the case of a small missile, is a human being, the results are predictably undesirable.[5] The article by Shuker and Sadda[7] highlights the fact that injury from falling bullets does occur with some frequency in certain parts of the world and warrants consideration in the differential diagnosis. This patient was fortunate in that necessary medical treatment, including access to neurosurgical care, was readily available to him. In situations where a neurosurgeon is not readily available, initiation of broad-spectrum antibiotic treatment followed by rapid transport to a facility with neurosurgical care is advised.

Figure 2. Scout computed tomographic image revealing penetration by the missile.

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