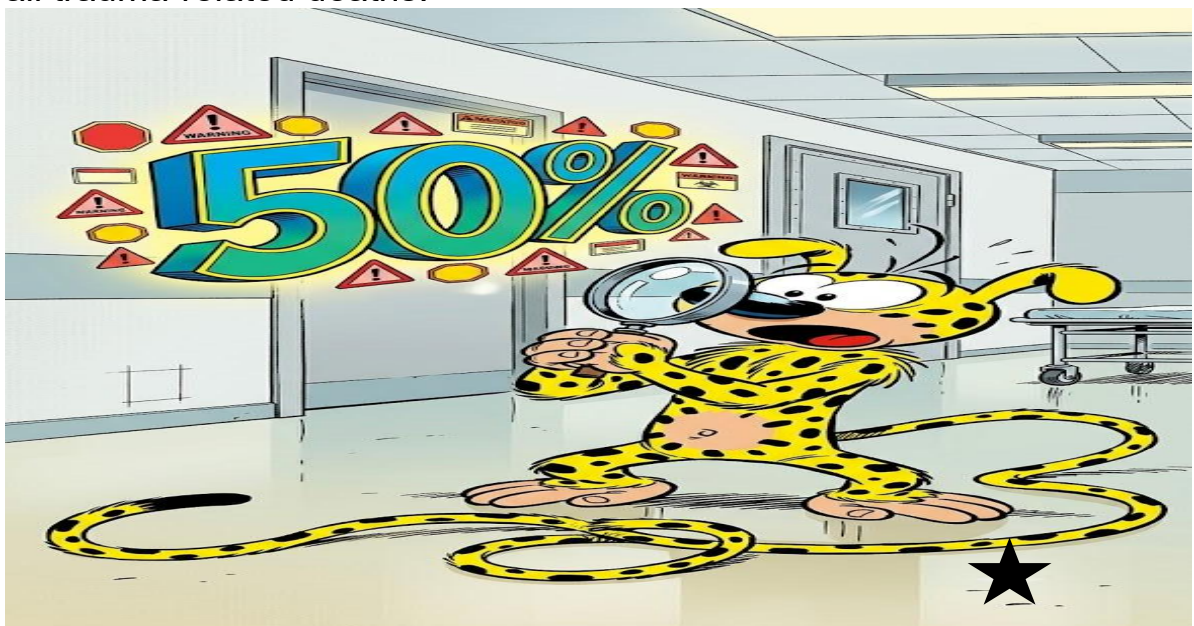




Summary - HEAD INJURIES-1

Written by Dr. Ali Abu Jamil

- * Houba! Head injuries are a massive deal, causing a lot of sickness and death in the community!
- * In Jordan, trauma is the 4th biggest killer (right after cardiac diseases, cancer, and vascular diseases), taking 500 to 800 lives every single year!
- * And get this—head injuries are responsible for more than half of all trauma-related deaths!



* Houba, look at these numbers! Death rates from head injuries are 9 per 100,000 in the UK, 25 per 100,000 in the USA, and 8 per 100,000 in Jordan!

* It accounts for 1% of all deaths out there.

* Sadly, it hits men more than women, and the young more than the old!

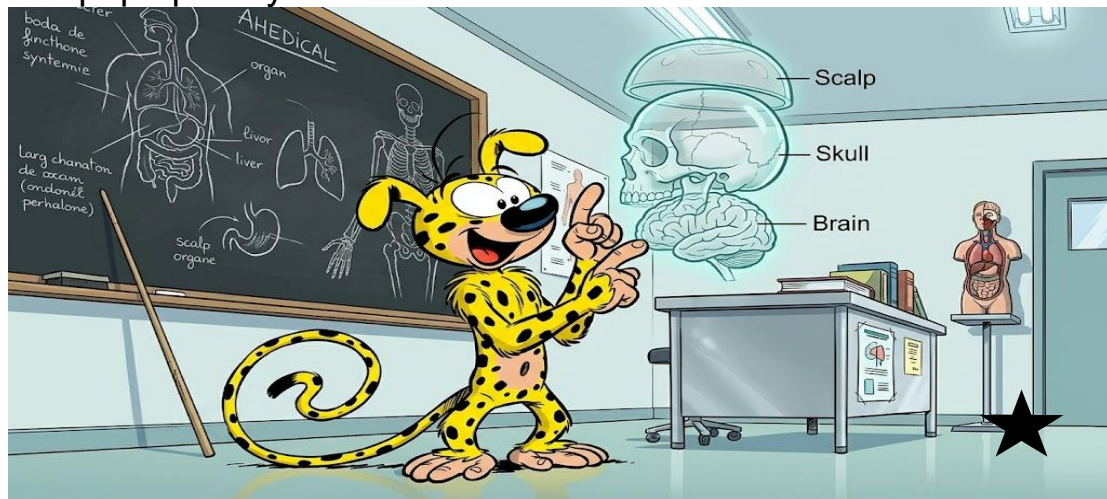
* What causes these in normal daily life? Houba! Road traffic takes the massive lead at 60%!

* Domestic accidents come in second at 30%, followed by industrial incidents, assaults, and sports!



* Now let's talk about the damage! Primary injuries are either closed or open (which means simple or compound), and they hit three areas: the Scalp, the Skull, and the Brain!

* Then there are Secondary injuries—these are complications that can pop up early or late!



- * Houba! When taking the patient's history, we gotta know the exact time and type of trauma!
- * We must ask if there were any convulsions or a Loss of Consciousness (LOC), especially watching out for that tricky "lucid interval"!
- * Don't forget to check for amnesia—both Post-Traumatic Amnesia (PTA) and Retrograde Amnesia!



- * Time for the physical examination, and we always start with ABC.....DE!
- * Check the blood pressure and respiration (shock is super rare here, unless it's a little kiddo or a severe scalp injury)!
- * Make sure those airways are patent, check the pupillary size, and assess the level of consciousness!
- * We measure that consciousness using the Glasgow Coma Scale (GCS), scoring from a perfect 15 down to 3!
- * Houba, the GCS checks three things: Eye Opening (spontaneous to none), Verbal response (oriented to none), and Best Motor response (following commands to none)!



* Give that scalp a good look for wounds, hematomas, Battle's sign, or Raccoon eyes!

* Then do a full neurological examination and check the other body systems too!



* For management, start with the ABC examination and make absolutely sure the airway is patent!

* Slap in an I.V. line right away!

* Order Skull X-rays (3 views!) and Cervical spine X-rays (because 16% of head injuries are associated with neck injuries)!

* And of course, get a CT-scan as indicated!

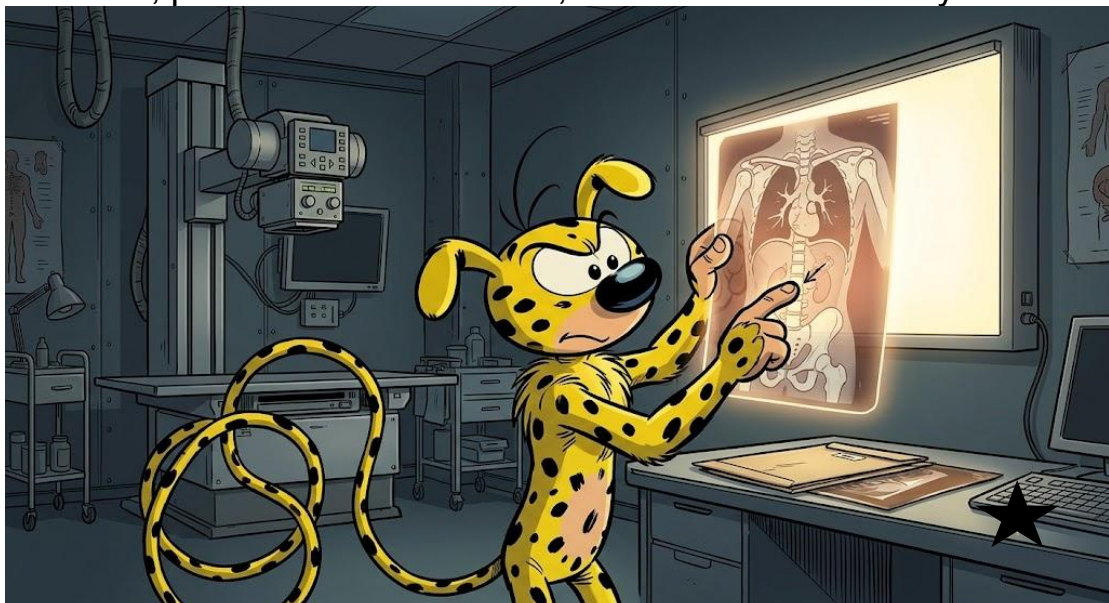


* Houba! We need a CT scan for specific reasons: patients below 5 and over 65 years old!

* Also if there's drug or alcohol consumption, or a witnessed Loss of Consciousness (LOC) for more than 5 minutes!

* We need it for amnesia, a Glasgow Coma Score (GCS) of 14 or below, and abnormal neurological signs!

* It's also indicated if there are skull fractures, signs of skull base fractures, post-traumatic seizures, or abnormal skull x-rays!



- * When do we admit the patient? Houba, it's a lot like the CT list!
- * Admit if they are under 5 or over 65, or if drugs and alcohol are involved!
- * Admit for LOC over 5 minutes, amnesia over 5 minutes, and a GCS of 14 or below!
- * Also for abnormal neuro signs, multi-trauma, or if the patient has other medical problems (comorbidities)!
- * Admit for skull fractures, skull base fracture signs, seizures, or abnormal brain-CT scans!
- * And the best rule of all: admit them "If you are in doubt"!



- * Now for the pathology classification! First up: Scalp Injuries!
- * Houba, there are 5 types of these injuries: Abrasions, Contusions, Wounds, Avulsions, and Hematomas!
- * And those hematomas are divided into Sub-galeal hematomas and Sub-periosteal hematomas!



* How do we treat an Abrasion? It's easy!

* First, clean it well with an antiseptic solution!

* Then apply some antibacterial ointment, and finally, cover it up with gauze!



* Houba! For a scalp contusion, we don't really need any specific treatment!

* Just put some cold compresses on it and give analgesia for the pain!



* Now for a cut wound, first you gotta shave around the area!

* Inspect the wound and feel the floor carefully to check for any fractures!

* Clean it well, remove any foreign material, and stop the bleeding!

* Approximate the edges and suture it in two layers using a deep inverted suture!



* Houba, a lacerated wound is a bit more work! Start by shaving around it!

* Inspect and feel the floor for fractures, clean it, and remove foreign stuff!

* Stop the bleeding and do debridement!

* Approximate the edges if you can—but you might need to rotate flaps or use a graft!

* Just like the cut wound, suture it in two layers using a deep inverted suture!

* For a degloving scalp (avulsion), if it's PARTIAL: stop the bleeding, clean with antiseptic, do debridement, approximate edges (or use flaps/grafts), and suture in two layers!

* If it's a COMPLETE avulsion: just stop the bleeding and graft it!



- * Watch out for a Subgaleal Hematoma! It might be related to birth trauma, caused by a torn emissary vein!
- * The blood pools underneath the galea aponeurotica and can get really extensive!
- * Houbaba, be careful! It can lead to hypovolemic shock in infants!
- * It feels like a soft, boggy swelling that extends across the midline!
- * Treat it with COMPRESSION! Try to avoid aspiration because you don't want an infection, and pay close attention to the baby's blood volume!



- * Houbaba! A Subpericranial (periosteal) hematoma is a peri-natal injury where blood collects underneath the pericranium!
- * It's limited by the skull sutures, so it does NOT cross the midline, and it feels like a firm swelling!
- * Treat it with compression! Try to avoid aspiration because you don't want an infection—and it might calcify later!



* A skull fracture is a break in the bone's continuity, and it means the trauma was pretty significant!

* It gives us a clue that there might be an extradural hematoma (happens about 5% of the time) or a brain injury!

* Diffuse trauma causes linear fractures, while localized trauma causes depressed fractures!

* We can spot them on plain x-rays or on CT scans using special views called "Bone Windows"!

* And the golden rule: THE PATIENT SHOULD BE ADMITTED!



* Depressed fractures can be just one fragment pushed in, or comminuted (which means multiple fragments)!

* Linear fractures are divided geographically into three types!

* First, Hair-line fractures in the vault of the skull—they get their name because they happen in the area normally covered by hair!

* Second, Diastatic fractures, which happen right inside the sutures, or start as a hair-line and then travel into the sutures!

* Basilar fractures usually happen in the anterior and middle cranial fossae at the base of the skull!

* Houba, watch out! They run into the paranasal sinuses and travel along the foramina, which can cause nerve and vascular injury!

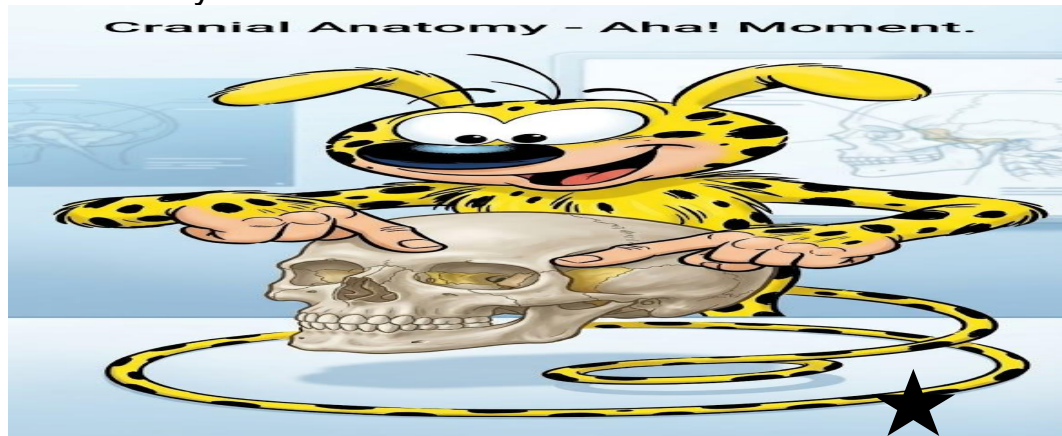


* If the basilar fracture is in the ANTERIOR cranial fossa, look for bruising around the eye—called Raccoon or Panda eyes!

* You might also see subconjunctival hemorrhage, occasional nerve or cranial nerve injury, and occasionally a CSF leak!

* If it's in the MIDDLE cranial fossa, look for bruising behind the ear, famously known as Battle's sign!

* It might also come with hemotympanum (blood in the ear), and occasionally a CSF leak!



* Houbba! Good news, there's no specific treatment for simple linear skull fractures—they just heal spontaneously within weeks to months!

* Just admit the patient for observation, and if they deteriorate, do a CT scan to rule out hematomas!

* If it's an open basal skull fracture, cover it with antibiotics and keep a close eye on the nose and ear for a CSF leak!



* Depressed skull fractures can be just one bone segment pushed in, or comminuted with multiple small depressed pieces!

* When do we operate? Houba, if the depression is deeper than the thickness of the adjacent skull!

* Also operate if it's compound and open, associated with seizures, has neurological signs, overlies an important area, or for cosmetic reasons!

* The operation could be a simple elevation, or a craniectomy!

* If we do a craniectomy, we have to fix it later with a Cranioplasty (using acrylic material)—which can be immediate or delayed if the fracture was compound!



- * Brain injuries happen from direct trauma, acceleration-deceleration injuries, or shearing!
- * Primary injuries include Concussion, Contusion, Laceration, and Diffuse Axonal Injury (DAI)!
- * Secondary events are things like brain edema, hypoxia, and ischemia!
- * A Concussion is a traumatically induced transient disturbance of brain function—it's diffuse and physiological!
- * The patient loses consciousness briefly, and when they wake up, they have amnesia!
- * Examination shows no abnormalities, and CT scans are usually completely normal!



- * A Contusion is a focal, structural injury where the brain directly impacts the inner skull or bony protuberances!
- * Houbba, you'll usually see these in the temporal and frontal lobes, causing coup contre-coup injuries!
- * They are notorious for causing brain edema, which makes them really tricky to manage!
- * In a Brain Laceration or burst lobe, the brain tissue is actually torn from direct trauma (especially penetrating) or acceleration-deceleration!
- * Sadly, the neurological deficits from this are usually permanent!



* Diffuse Axonal Injury (DAI) comes from a shearing injury at the interface of grey and white matter!

* If it's extensive, the patient will be in a deep coma (3/15), and we grade it using an MRI!

* We divide brain injuries into three categories by GCS: Mild (14-15), Moderate (9-13), and Severe (8 and below)!

* Start with ABC! Then treatment depends on the clinical picture, CT scan, and pathology!

* Our main aim is to treat the pathology and prevent those secondary injuries!

* We use ventilation if indicated, manage intracranial pressure, and give medications like anticonvulsants and antibiotics (steroids are questionable)!

* If needed, we do surgery like burr holes, craniotomies, or craniectomies!





**"Every thought you choose, every habit you repeat, and every challenge you embrace leaves a biological signature within your brain. The remarkable power of neuroplasticity reminds us that the mind is not merely shaped by life—it continually reshapes itself. Protect your brain, feed it with knowledge, and let your actions build the neural pathways that carry you toward the person you aspire to become."
— Dr. Ali**