G37 Typical Contrecoup Injury of Fixed Head by a Blow: A Case Report

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After attending this presentation, attendees will be able to learn an unusual case demonstrating a prominent contrecoup injury of fixed head which is caused by a blow and get a lesson about how to identify a cause of head injury through examining a cerebral contusion.

This presentation will impact the forensic science community by presenting an exceptional practical point regarding on how to interpret the occurrence of coup and contrecoup injury, and contributing to a study about the mechanism of the coup and contrecoup injuries by suggesting that several factors including anatomical position of the deceased, a surface area of a blunt weapon, damaged area and etc should be considered together to distinguish between two injuries.

It is critical to distinguish between coup and contrecoup injuries because it provides important information about the cause of the head injury. It is well known that coup injury is more dominant by a blow and contrecoup by a fall. However, several exceptions have been reported, and one of them is that contrecoup would be more prominent when a fixed head to a ground or a wall is struck by a heavy blow

A 45-year-old man was found dead in a prone position on a cabin of his village with a severe head injury. The police investigation proved his son's crime associated with a gambling debt.

On the postmortem examination, there were multiple bruises with semi-circular lacerations on occipital area and posterior portion of left temporal area of the scalp, and small bruises on right forehead and zygomatic region. Widespread subcutaneous hemorrhage and communicated and depressed skull fracture with several linear fractures on occipital bone of calvaria were identified. On the skull base, front to back fracture, which run occipital bone, right side of foramen magnum, right temporal bone, sellar turcica and right frontal bone, and small linear fractures on both orbital roof of frontal bone were noted. The brain showed multiple and large contusions on poles and undersurface of both frontal lobes and poles of both temporal lobes, and relatively small and weak contusions on both occipital lobe and right lobe of cerebellum. The remaining body was unremarkable except a contusion with intramuscular hemorrhage of left shoulder and small abrasions of right elbow.

The deadly weapon used in the crime was a hammer with an octagon-shaped surface, which is 35.0cm in an overall length, 10.0cm in length of the head, 10.2cm^2 in surface area and 978g in weight, and it turned out that he was hit by a hammer on the occipital area in a sitting posture, and then more than 10 times in a prone position.

There were several factors which were associated with injury pattern such as anatomical position of the deceased, a type and a surface area of a blunt weapon, damaged area, material quality of the floor, and the number of impacts. This deceased placed a face on wooden floors and received repetitive blows on the occipital area by a heavy hammer with relatively large surface.

In conclusion, this case showed that a blow can cause contrecoup more significantly than coup injury and this was more likely to be interpreted when several factors, particularly that head is fixed to a ground or a wall, were considered together.

Cerebral Contision, Coup, Contrecoup

