

H

Heterotopic Ossification

Beth Rush

Psychiatry and Psychology, Mayo Clinic,
Jacksonville, FL, USA

Synonyms

HO

Definition

Heterotopic ossification (HO) is a formation of lamellar bone in soft tissues following brain or spinal injury (Hendricks et al. 2007). HO usually involves the large joints of the body such as the hip, elbow, shoulders, and knees. In cases of traumatic brain injury, one of the most common sites is the hip. In cases of spinal injury, HO always occurs below the level of injury. Research has not clearly identified the causes of HO (Genet et al. 2011). Some have suggested that connective tissue cells change their characteristics into bone-forming cells as some type of inflammatory reaction to injury. Individuals with other bone-forming disorders such as ankylosing spondylitis, Paget disease, and idiopathic skeletal hyperostosis are at the risk for HO following traumatic brain or spinal cord injury (Almangour et al. 2016).

HO resultant from brain injury may not remit and can create considerable pain and disability for a brain injury patient (Cullen et al. 2007). Initially, pain and swelling are present, which typically subside within the first few weeks following the onset. In some cases, a hard, ossified lesion arises 6–12 weeks following injury onset. In these cases, pain symptoms and swelling persist. In any case, the pain and swelling resulting from HO limits the patient functionally and limits potential gains from rehabilitation.

References

- Almangour, W., Schnitzler, A., Salga, M., Debaud, C., Denormandie, P., & Genet, F. (2016). Recurrence of heterotopic ossification after removal in patients with traumatic brain injury: A systematic review. *Annals of Physical and Rehabilitative Medicine*, 59, 263.
- Cullen, N., Bayley, M., Bayona, N., Hilditch, M., & Aubut, J. (2007). Management of heterotopic ossification and venous thromboembolism following acquired brain injury. *Brain Injury*, 21, 215–230.
- Genet, F., Jourdan, C., Schnitzler, A., Lautridou, C., Guillermot, D., Judet, T., Poiraudau, S., & Denormandie, P. (2011). Troublesome heterotopic ossification after central nervous system damage: A survey of 570 surgeries. *PloS One*, 6, e16632.
- Hendricks, H. T., Geurts, A. C., van Ginneken, B. C., Heeren, A. J., & Vos, P. E. (2007). Brain injury severity and autonomic dysregulation accurately predict heterotopic ossification in patients with traumatic brain injury. *Clinical Rehabilitation*, 21, 545–553.