Prophylaxis of heterotopic ossifications: State of the art

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Keywords: Heterotopic ossification; Head injuries; Spinal cord injuries; Hip arthroplasty; Acetabular fractures; Prevention; Pharmacological treatment; Non-pharmacological treatments

Introduction.– Heterotopic ossifications (HO) occur in specific pathological conditions: spinal cord injuries (10–53%) and brain injuries (11–73%), hip joint replacement or hip acetabular fractures (5–90%) and severe burn. They are defined as the formation of a lamellar bone in soft tissues typically para-articular. Is it possible to avoid or reduce occurred HO with therapeutic procedures?

Method.– Analysis of levels of evidence studying preventive interventions of heterotopic ossification occurrences in these pathological conditions.

Results.– Four literature reviews published between 2009 and 2011 were analyzed and criticized. We focused on prevention studies attempting to reduce the heterotopic ossification risk occurrences in PMR specific conditions.

Discussion.– Pharmacological therapies or non-pharmacological therapies seek to avoid the formation of functionally disabling HO (Brooker classification) in three different diseases. Various studies have been conducted to assess the HO primary or secondary prevention in spinal cord injuries. Ranefoxib, indomethacin, etidronate, pulsed electromagnetic fields or radiation therapy reduces the risk of HO occurrence (randomized controlled trials). Warfarin could reduce risk (retrospective observation). HO prevention related to hip surgical trauma (total hip replacement, acetabular bone) is effective with anti-inflammatory and/or radiotherapy at the cost of adverse events specific to each procedure. Pulsed electromagnetic fields are also effective. Few prevention studies have been conducted in cases of traumatic brain injuries: we cite a study by etidronate for secondary prevention of recurrence after surgical excision, postures and mobilizations.

Further reading


http://dx.doi.org/10.1016/j.rehab.2012.07.447

Unusual localizations of heterotopic ossification in traumatic brain injury

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Keywords: Heterotopic ossification; Traumatic brain injury; Shoulder

Introduction.– Heterotopic ossifications (HO), or para-osteoarthropathies, are a frequent complication after traumatic brain injury, with a prevalence ranges between 10% and 20% [1]. Complications, like increased joint stiffness, ankylosis, or, rarely, neurovascular compressions, depend widely on localisations of HO. This has therapeutic impact because some of these complications must be surgically treated, sometimes quickly.

Observation.– We report two cases, from CHU of Montpellier, between November 2011 and April 2012.

Case No. 1 is a 22-year-old man who suffered of severe traumatic brain injury (initial GCS 6), with right coracoid base fracture associated with acromio-clavicular joint dislocation. At 1 month, we noticed, on CT with three-dimensional surface reconstructions, an heterotropic bone formation around the fracture and the acromioclavicular joint. The patient was not symptomatic (no pain nor limited range of motion).

Case No. 2 is a 44-year-old man who suffered of multiple trauma with severe traumatic brain injury (initial GCS 4) with transverse process fracture of C6 and right clavicle fracture. After 3 months, we noticed a development of soft tissue ossification, between the right clavicle and the transverse process of C6, with early hypertrophy on bone scintigraphy, and a bony formation in the right coracoclavicular space. On clinical examination, we noticed an important limited range of motion of cervical vertebrae with non-reducible left head tilt.

Materials and methods.– A single-center study was carried out using the » BANKHO » database including 367 patients with 549 surgical interventions for troublesome HO after central neurological system (CNS) lesion (from 1994 to 2011). Patient’s characteristics, aetiology of CNS damage, HO location, indication for surgery, complementary exam results and nerve macroscopic characteristics were collected. Neurolysis for sciatic nerve and HO resection were practiced by the same surgeon.

Results.– Among this database, 45 patients benefit surgery of sciatic nerve neurolysis and HO excision for 55 posterior hip HO. Clinical suspicion for sciatic lesion was found in 12 HO cases. Eleven conduced to surgery for sciatic nerve compression associated or not with hip stiffness or coxalgia. The proportions of surgery for nerve compression seem the same in the different patient groups. Diffuse brain injury patients are often operated for stiffness while focal brain lesions for pain (P = 0.03). Ten electromyography collected showed real signs of sciatic nerve lesions. After surgery, the number of people walking without technical assistance increased from one to seven, has doubled among dependant patients and sit position was possible in 100%.

Conclusion.– Sciatic nerve compression by a posterior hip HO after CNS lesion is not frequent. It has to be diagnosed the earlier as possible with the aim of restoring a neurological function after surgery, EMG is very useful mainly in cases of clinical symptoms are rare in patients with cognitive impairments or sensitivity loss.

Reference


http://dx.doi.org/10.1016/j.rehab.2012.07.448

Neurogenic heterotopic ossification (NHO) and nerve compression: Example of the hip posterior HO and sciatic compression

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Keywords: Heterotopic ossification; Nerve compression; Sciatic nerve

Introduction.– Hip is the most important troublesome location for troublesome NHO. Sciatic nerve compression can be occur when NHO are posterior [1]. The aim of this study is to describe the clinical and complementary exams characteristics and the HO features among patients who suffered from a posterior hip NHO.