Prophylaxis of heterotopic ossifications: State of the art
F.C. Boyer, a,*, A. Rapin, b, L. Percebois-Macadre c, V. Bombart, b, M. Toussaint, b, J.-M. Coulon, a, E. Regrain, e, G. Bellassain, c, C. Herbin, a, A. Chéné, a, F. Kolangourou a

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. Rofecoxib, 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 effective in primary prevention, NSAIDs or bisphosphonates for secondary prevention of recurrence after surgical excision, postures and mobilizations.

Further reading

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

Neurogenic heterotopic ossification (NHO) and nerve compression: Example of the hip posterior HO and sciatic compression
M. Salga a,*, M.C. Durand, C. Jourdan, A. Schnitzler, P. Denormandie, F. Genet CHU Raymond-Poincaré, 104, boulevard Raymond-Poincaré, 92380 Garches, France

Keywords: Heterotopic ossification; Nerve compression; Sciatic nerve analysis. 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 examinations characteristics and the HO features among patients who suffered from a posterior hip NHO.

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 HOs. Clinical suspicion for sciatic lesion was found in 12 HO cases. Eleven conducd 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 electro-neuromyography 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

Unusual localizations of heterotrophic ossification in traumatic brain injury
L. Corti a,*, E. Galano a, J. Froger b, K. Bakhti c, A. Nougaret d, F. Coroian c, C. Herisson a, I. Laffont a

Keywords: Heterotopic ossification; Traumatic brain injury; Shoulder 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 multiple trauma with severe traumatic brain injury (initial GCS 6), with right coracoid base fracture associated with acromioclavicular 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 hyper trophy 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.
with palpation of a right large neck mass and peripheral nerve disorders of the right upper limb.

Discussion.– To our knowledge, no previous description of cervical para-osteopathoarthropathy following traumatic brain injury has been reported in the literature. Para-osteopathoarthropathy of the scapular region usually affects the glenohumeral joint with functional impairment, which can be more important than when the coracoclavicular joint is affected [2]. HO, in particular in unusual localizations, should always be searched after traumatic brain injury, especially if multiple trauma is associated, to allow an earlier, and more efficient, medical or surgical treatment.

References

http://dx.doi.org/10.1016/j.rehab.2012.07.449

CO11-005-e

Functional outcomes after surgery for neurogenic heterotopic ossifications: 17 cases collected at the Department of physical medicine and rehabilitation, Casablanca University Hospital

Y. Abdelfettah,*, D. Cherqaoui, Y. El Anbari, A. Khadir, F. Lmidmani, E.F. Abdellatif
Service de médecine physique et de réadaptation fonctionnelle, CHU Ibn Rochd, quartier des hôpitaux, 20100 Casablanca, Morocco
*Corresponding author.
E-mail address: y.abdelfettah@gmail.com.

Keywords: Heterotopic ossification; Functional surgery; Continues passive mobilization

The aim is to determine functional outcomes of patients undergoing surgery for neurogenic heterotopic ossifications (NHO)

Material and methods.– This was a prospective study of patients who underwent surgery for NHO followed by intensive rehabilitation care in our department from January 2009 to December 2011. The evaluation included a joint assessment and a functional assessment for each affected joint.

Results.– There were 17 patients (27 operated joints). The sex ratio was 1.4 and the average age 31.6 years (19–41 years). Operated joints were: knee (n = 11, 40.7%), elbows (n = 10, 37%), hips (n = 6, 22.3%). All patients received physical therapy based mainly on continuous passive mobilization of the elbow or knee in addition to functional work. For operated hips, the Postel Merle d’Aubigné (PMA) score improved from 6.5 to 8. In patients who had knee surgery, the functional status improved: one patient recovered ability to walk and the others a good sitting position. For patients who had elbow surgery, the functional assessment revealed improved possibilities for global nutrition (hand-mouth), hygiene (hand-face) and grooming (hand-neck).

Discussion and conclusion.– The main objective of surgery for NHO is to restore joint mobility and function. The results are generally good as confirmed by our outcomes. Appropriate rehabilitation in an experienced PRM unit greatly contributes to improved functional capacities.

Further reading


http://dx.doi.org/10.1016f.rehab.2012.07.450

CO11-006-e

The heterotopic ossifications in the traumatic limb amputation by war wounds: Case report

H. Bisseriex,*, D. Rogez, S. Compere, H. Mercier, F. Dochez, E. Lapeyre
Hôpital d’instruction des armées Percy, 101, avenue Henri-Barbusse, 92140 Clamart, France
*Corresponding author.
E-mail address: helene.bisseriex@neuf.fr.

Keywords: Heterotopic ossification; Traumatic amputation; Blast injuries; War

Introduction.– The heterotopic ossifications in the traumatic war amputations are the object of some historic descriptions. Their incidence increased considerably in the current conflicts (Iraq, Afghanistan) among the American soldiers, with the frequency of wounds by explosion [1].

Case report.– We report the case of a 24-year-old mountain infantryman, who activated with his foot the explosion of an improvised explosive device, causing the direct distal left tibial amputation, and a polycrileage of the right lower limb and the left hand. He had two debridements and two negative pressure wound therapies before the regularization of the amputation at day 8, which was complicated by a voluminous haematoma.

Pain of the residual limb appeared at the eighth week and let discover distal heterotopic ossifications on the external and internal borders, deforming the residual limb. The adaptation of the prothesis allowed an improvement of pain and a good functional result.

Discussion.– Approximately 60% of the amputees in the American and English conflicts present heterotopic ossifications [2], among which 1/3 are asymptomatic. Contributing factors are the severity of all the initial wounds and the amputation in wounded zone. It seems that the associated traumatic brain injury, the blast, the number of days before the skin closure, the number of wound cares and the use of a negative pressure wound therapy could be associated [2]. The appearance of heterotopic ossifications in the secondary amputations and their link with the severity of all the initial wounds are elements for the intervention of specific biomarkers of wounds, not yet identified.

References

http://dx.doi.org/10.1016f.rehab.2012.07.451