

DTNHO: Diagnosis and Treatment of Neurogenic Heterotopic Ossification



Business area

*Diagnostics,
Therapeutics*

Market sector

*Traumatology, Rheumatology,
Musculoskeletal Pathology*

Medical Indication

*Neurogenic Heterotopic Ossification,
Abnormal bone growth*

Research goal

To prevent abnormal bone growth associated with neurological damage.

Problem to solve

Heterotopic ossification (HO) is a pathological condition characterized by the abnormal bone formation in extra-skeletal soft tissues. As a result, clinical manifestations such as limited range of movement, pain, swollen, vascular/nerve entrapment appear, decreasing patients' quality of life and compromising their dependency.

According to its aetiology, HO can be divided in genetic or acquired. Genetic HO is considered the most severe variant, while acquired HO is more frequent, and normally less severe than the hereditary form. Regarding acquired HO, there are several risk factors that contribute to its development. Among them, neurogenic insults (>50%), severe fractures (40%) or hip joint replacement (3-90%) stand out.

Neurogenic HO (NHO) is one of the most frequent complications of suffering a concomitant injury in the nervous system and a long bone fracture. Despite its aetiology, it is not understood, studies pointed the convergence of "osteoinductive" neurological factors released by the damaged nervous system, and the osteoinductive local factors secreted from the fracture as potential factors to promote ectopic bone formation. Nonetheless, currently there is not a reliable biomarker to predict HO's development. Additionally, there are not effective and non-aggressive therapies to target NHO.

Innovation

Even though it is known that more than 50% of patients who suffer a traumatic brain injury, and about the 20% who suffer a spinal cord injury can develop NHO, there are no reliable biomarkers to predict the abnormal bone formation in these patients. Moreover, there is no effective and non-aggressive treatment for this disease. The present invention offers an innovative technology to predict and prevent NHO through the development of a kit to assess the expression levels of "osteoinductive" biomarkers in peripheral blood samples from patients at risk of developing NHO. Moreover, it also offers a preventive therapeutical approach through targeting these "osteoinductive" biomarkers.

Market opportunity

Relevant markets for the invention are expected to increase their size significantly in the next years, due to the rising prevalence of musculoskeletal pathologies, other factors such as road accidents and the subsequent increase in joint replacement procedures. As an example, the market value expected for *Hip Replacement* in Europe (one of the most prevalent replacement procedures) will reach 10 billion dollars in 2032.

Research team

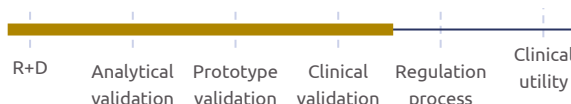
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Intellectual property

EP23382063. "Diagnosis and Treatment of Neurogenic Heterotopic Ossification"

Development stage:



Available for: *Licensing, co-development*