

Extracorporeal Shock Wave Therapy (ESWT): How to plan and treat a patient with non-union in long bones fractures.

Effectiveness of ESWT (Extracorporeal Shock Wave Therapy) in pseudoarthrosis and delayed union

Authors:

Alessandro Lettera, MD Davide Rozzati MD,
Francesco Cravero MD – Alessandro Littera MD - Francesca Travaglini MD – Giuseppe Sessa MD – Alessandro Carriero MD – Paola Fazio T.S.R.M.

Institution:

Istituto Universitario di Radiodiagnostica
Ospedale Maggiore della Carità ,Corso Mazzini 18
28100 NOVARA, Italy

Introduction:

Extracorporeal shock wave therapy is now accepted as an additional therapy, with low risks and invasivity, in the pseudoarthrosis and delayed union of long bones treatment. Our objective is to define and explain how patients with non healed long bones fractures can be prescribed and perform ESWT treatment. Our study also investigated the effectiveness of ESWT in the treatment of 30 patients with history of non unites fractures of long bones or pseudoarthrosis.

Materials and methods:

Patients with delaying in healing and consolidation of long bone fracture can be sent from the orthopaedic specialist to a radiology center to be treated by mean of ESWT.

The first step in our treatments with ESWT is to define the patient's exclusion criteria, such as pregnancy, heart disease, coagulopathy, epiphiseal plate within the shock wave fiel and brain or spine within the shock wave field, and inclusion criteria, non-union of long bones fractures defined as a failure to show bony union six months after initial close or open treatment. We select the treatment area (target) by mean of fluoroscopic or ultrasonographic guidance and we plan the number of treatments, the shock wave impulses for each treatment, the energy flux density and the proper generator of shock waves to use. Shock wave treatment is provided with a "REFLECTRON" (HMT, Kreuzlingen, Switzerland) ESWT System.

After the treatments, and a proper rest, we do an x-ray control, to define the progress of bone union.

In our Institute from 03/03/2004 to 31/10/2004 thirty patients, 10 female and 20 male (range 15-68 years) were treated. 15 patients had pseudoarthrosis and 15 delayed union of long bones.

The treatment procedure was 3000 shocks with 240 shocks/min frequency for every treatment. Every patient had one treatment a week for 4 total treatments (one month).

A valuation schedule to define the upcoming of bony union was done for every patient. In our study we didn't require immobilization, anesthesiologic support or hospitalisation.

Results:

The study was successful in 8 patients.

Pseudoarthrosis was successfully treated in 2 patients.

Delayed union of long bones was successfully treated in 6 patients.

Discussion

Results in our study revealed that ESWT can be considered as first choice in the treatment of delayed union for long bones and pseudoarthrosis.

The femur seems to be the most responsive bone.