

# Adverse effects associated to the application of ultrasound-guided percutaneous needle electrolysis

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## Abstract

**Background** Percutaneous needle electrolysis is a technique of invasive physical therapy which is increasingly used by physical therapists in their clinical practice. However, to date, no studies have analyzed the presence of adverse effects.

The aim of the present study was to evaluate the incidence of adverse effects and the associated impact of the application of ultrasound-guided percutaneous needle electrolysis in disorders of the neuro-musculoskeletal system.

**Material and Method** A prospective case series study was performed over a period of six months at the Sannus Clinic center (Madrid). A sample of patients was identified and recruited, and follow-up was performed up to six months after discharge. Initial information was collected regarding demographic data (age and sex) and clinical data (affected structure, area, type of pain and process associated to the pathology). During each of the sessions performed, percutaneous needle electrolysis was applied in an isolated manner and data were gathered on the treatment received, as well as the presence of any adverse effects. An adverse effect was considered as being any incident related with the application of percutaneous needle electrolysis which caused any damage, as perceived by both the patient and the physical therapist who applied the treatment. The type of adverse effect was recorded (pain, bleeding, hematoma, post-intervention vegetative reactions [sweating, pallor, abdominal discomfort], syncope, skin lesions, damage to organs, nerve lesions, pneumothorax, metal allergy), the moment these appeared (during application, after application, days after the application), its severity (transitory (<48h), reversible (resolved at discharge), irreversible), its impact (did not require any specific intervention, required an additional specific physical therapy intervention, required intervention from medical staff (without hospitalization), and cause (insufficient skill with the technique, malpractice, inappropriate protocol). The adverse effects were classified as mild or severe depending on whether or not an intervention was required.

**Results** 214 patients (60.7% men; 39.3% women) received a total of 772 sessions, the mean number (and standard deviation) of sessions was 3.6 (1.1). The totality of patients treated with ultrasound-guided percutaneous electrolysis received more than one session, according to the methodology described by Valera & Minaya. The main reasons for consultation were tendinous pathologies (70.5%), muscle pathologies

## Keywords

- ▶ percutaneous needle electrolysis
- ▶ adverse effects

(11.7%), ligaments (6.5%), joint capsule-synovia (5.6%), nerve entrapments (4.2%) and others (1.4%). Degenerative processes were more common than acute inflammatory processes. The greatest incidence was in the lower limbs. Degenerative processes were significantly more frequent than tendinous problems. During the 772 sessions of ultrasound-guided percutaneous needle electrolysis, the most common adverse effects were pain during the intervention (96.1%) and in the days following treatment (71.1%), as well as mild vasovagal responses post-intervention (80.1%). One syncope was recorded (0.13%). All the effects were transitory and without impact. No hematomas were detected in the days after a mild bleeding, when this occurred (9.3%). Interventions were performed on the thorax in 1.5% of the procedures, close to organs (0.5%) or close to peripheral nerves (4.2%) without any adverse effect. In the 6-week follow-up after discharge no adverse effects were detected.

**Conclusions** Percutaneous needle electrolysis is a safe technique. The adverse effects provoked by the application of percutaneous needle electrolysis are mild, transitory, without impact on the person's health and following a homogenous pattern. The pain and the mild vasovagal response associated with the intervention are frequent and inherent to the stimulus generated by the needling and the electric current employed.