LETTER TO THE EDITOR

ADVERSE EVENTS IN DRY NEEDLING AND MESOTHERAPY TREATMENT FOR LOCALIZED MYOFASCIAL AND MUSCOLOSKELETAL PAIN

G. RONCONI[1], S. SALINI[1], G. MACCAURO[2], M. MAMMUCARI[3] and P.E. FERRARA[1]

[1]University Policlinic Foundation A. Gemelli IRCCS, Rome, Italy; [2]Orthopedic and Traumatology Institute, Catholic University of the Sacred Heart, Rome, Italy; [3]Primary Care Unit ASL RM 1, Rome, Italy

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To the Editor,

Myofascial pain is commonly seen in clinical settings and negatively influences patient's daily life. It is a frequent cause of musculoskeletal pain characterized by trigger points and limited range of motion in joints. It affects more than three-quarters of the world's population. Mesotherapy and dry needling are reported as effective treatments for this myofascial and musculoskeletal localized pain.

Mesotherapy consists in intradermal microinjections of drugs (nonsteroidal anti-inflammatory drugs, muscle relaxants, anesthetics, and other analgesics) in the area of localized pain. The advantages of this treatment include higher time of local drug activity, lower risk of adverse events and of interactions with other drugs. The technique of dry needling involves the insertion of needles superficially or deeply into the pain area or trigger point. The needles used, in this case, are usually 0.16–0.3mm thick and 1.5-6 cm long. The needle remains in place for a short time (from 30 s to 3 min), and is then removed. We carried out a narrative review, reporting adverse events of mesotherapy and dry needling in localized myofascial and musculoskeletal pain, because of the increased interest in these arguments, as well as for the higher risk of adverse events if the techniques are practiced by non-expert and non-authorized health subjects. The MEDLINE search was done in February 2020, using PubMed, with the MeSH terms: 'adverse events, mesotherapy, intradermal therapy, dry needling and pain in humans', without limits of time and languages. The results are shown in Table I: two papers describing mesoterapy (1, 2) and six articles regarding dry needling (3-8) adverse events. Serious adverse events were described in 4 patients affected by pneumothorax treated with dry needling, and one patient with acute spinal epidural hematoma after needle application. Mild adverse events were reported in patients treated with mesotherapy for musculoskeletal or myofascial pain.

DISCUSSION

Clinical studies have shown interesting and encouraging results in the treatment of localized pain with mesotherapy (2, 10) and dry needling. The incidence of serious adverse events reported in the literature is rather rare. Pneumotorax and acute spinal epidural hematoma are associated with dry needling insertions (4, 5, 7, 8). During dry needling, bleeding was the most frequently reported adverse event, bruising was the second, followed by pain during treatment and pain after treatment. Aggravation of symptoms was followed by drowsiness, feeling faint, headache and nausea. Only mild adverse events are

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Corresponding Author:
Gianpaolo Ronconi MD,
Fondazione Policlinico Universitario "A. Gemelli",
Largo Agostino Gemelli 1,
00168 Rome, Italy
Tel:. +39 3477123940
e-mail: gianpaolo.ronconi@policlinicogemelli.it

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described in patients treated with mesotherapy for musculoskeletal pain. In particular, there is a great deal of data showing that this technique is well tolerated, but adverse reactions (allergic reactions, ecchymosis, and urtica) have been described. Mesotherapy can cause mild discomfort when the needle is introduced, and this is more common in sensitive patients (1, 2).

The different pH of some medications may cause pain during injection, and adjustments of pH with NaHCO3 have been suggested to reduce discomfort. Other local transitory effects (itching, hypersensitivity, discomfort, and irritation), probably due to the type of drug or combination of drugs, have been reported (2). The use of a single drug appears to reduce the risk of local side effects, and the risk of infection is avoided if correct aseptic procedures are followed (2). Literature reports that subcutaneous infections (2) are generally caused by external contamination and malpractice rather than to the technique itself. More severe infections are reported when mesotherapy is used in cosmetic fields.

The Italian Mesotherapy Society (12) has issued recommendations to clarify how and when to apply this technique. In fact, thanks to a rigorous medical-scientific approach launched in Italy and now

Table I. *Mild and serious adverse events after mesoterapy and dry needling treatments in myofascial and musculoskeletal pain reported in literature.*

Author	Type of paper	Treatment	Mild adverse event*	Serious adverse event *
D. A. Narvarte et al (1) 2011	Retrospective study	Mesotherapy	25% (n. 67 /n. total patients 267): muscular weakness 1.5%, rash 1.5%, drowsiness 1.1% itching 1.1%	
Mammucari et al (2) 2012	Review	Mesotherapy	**Allergic reactions, ecchymosis, urtica, pain, itching, hypersensitivity discomfort, irritation, subcutaneous infection	
Brady et al (3) 2014	Review	Dry needling	19,18% (n.146 /n.total patients 7629 treated) bruising 7.55% bleeding (4.65%) pain during treatment (3.01%) pain after treatment (2.19%) aggravation of symptoms (0.88%) drowsiness (0.26%), headache (0.14%) nausea (0.13%) fatigue (0.04%) altered emotions (0.04%), shaking, itching, claustrophobia, and numbness 0.01%.	
Grusche et al (4) 2016	Case series	Dry needling		n. 2 Pneumothorax
Ronconi et al (5) 2016	Case report	Dry needling		n.1 Pneumothorax
Uygur E et al (6) 2017	Prospective controlled study	Dry needling	5,8%patiens of n. total 51: n.2 local pain n.1 local hemorrhage	
Uzar T. et al (7) 2018	Case report	Dry needling		n. 1 Pneumothorax
Berrigan et al (8) 2019	Case report	Dry needling		n.1 Acute Spinal Epidural Hematoma

**Number or percentage of patients are reported*

***Number or percentage of patients affected by mild adverse events are not reported in this review*

implemented internationally, the use of compounds not previously studied for safety and efficacy and the practice of mesotherapy by inadequately prepared personnel are strongly discouraged.

In dry needling, the needle used is regulated by the FDA as a class II medical device. In Italy the legislation provides that the practice of this method is an exclusive medical prerogative. Internationally, the practice of this technique is also carried out by physiotherapists. The correct use and application of these techniques require clinical and pharmacological skills by medical doctors and they should be undertaken following a complete clinical workup and subsequent diagnosis.

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