

Palmitoylethanolamide vs NSAID in the treatment of TMJD pain



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Introduction

Palmitoylethanolamide (PEA) is an endogenous agent in the family of fatty acid amides and chemically known as N-2(2-idrossietil)esadecanamide (fig. 1).

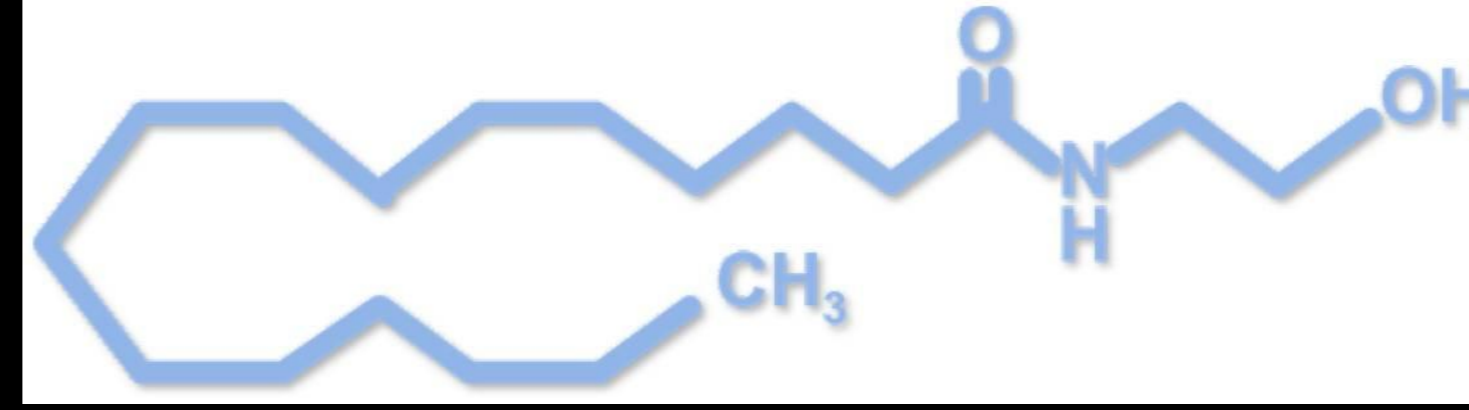


Figure 1: structural formula of PEA

PEA is a cannabinomimetic compound that acts on cannabinoid receptors (CB1¹ and CB2²), located on mast cells (fig.2-3-4) and sensitive neurons. It plays mainly an antilogistic role³ by down-modulating the release of inflammatory and nociceptive mediators⁴⁻⁵ and it is today considered a key in the regulation of complex pathways that concern not only inflammation, but also processes underlying itch and pain, both neurogenic and neuropathic⁶. Its action is named "autacoid local injury antagonism" (ALIA)⁷ because it is involved in endogenous protecting mechanisms, implemented by human body in response to varied types of injuries.

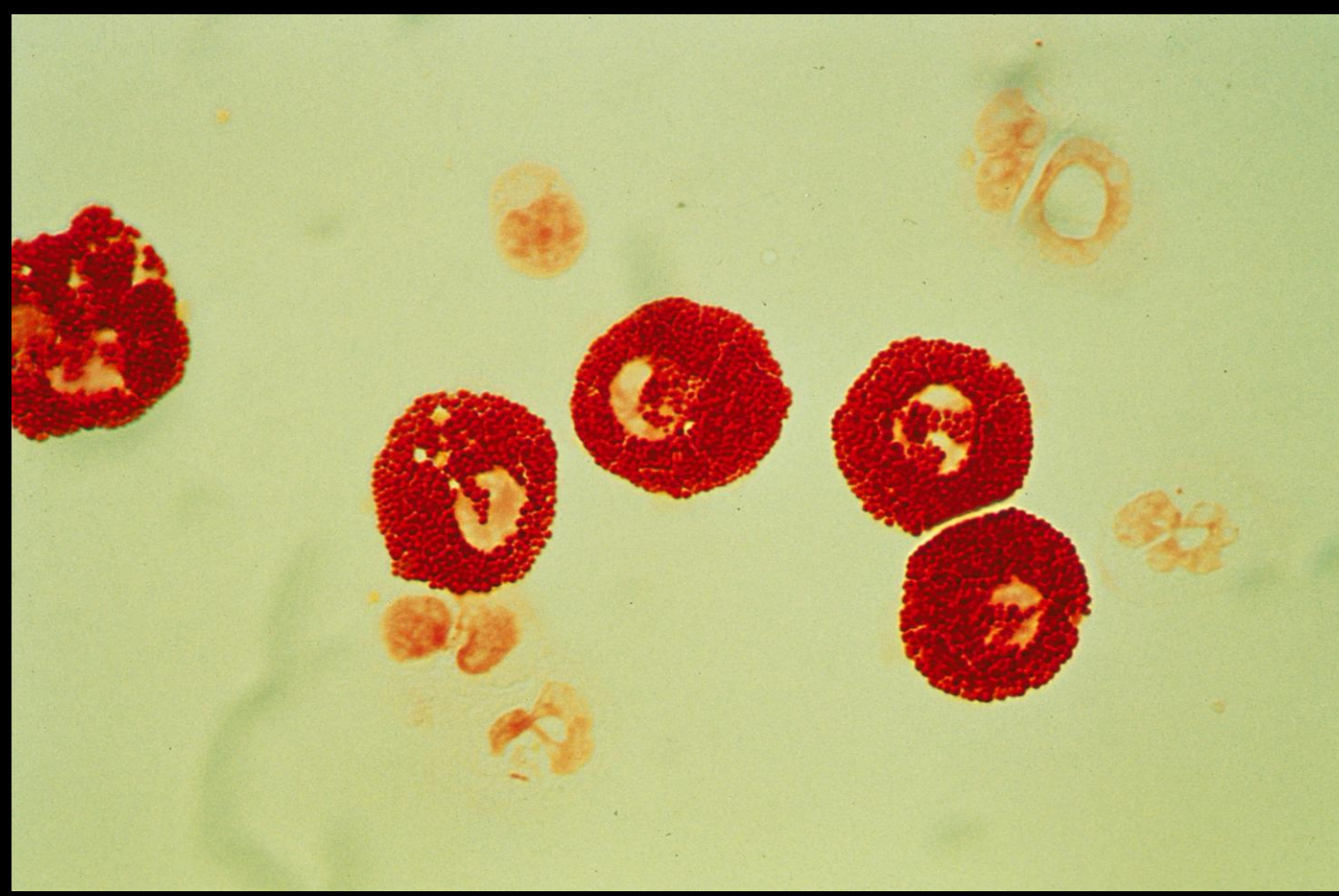


Figure 2: mast cells under optical microscope

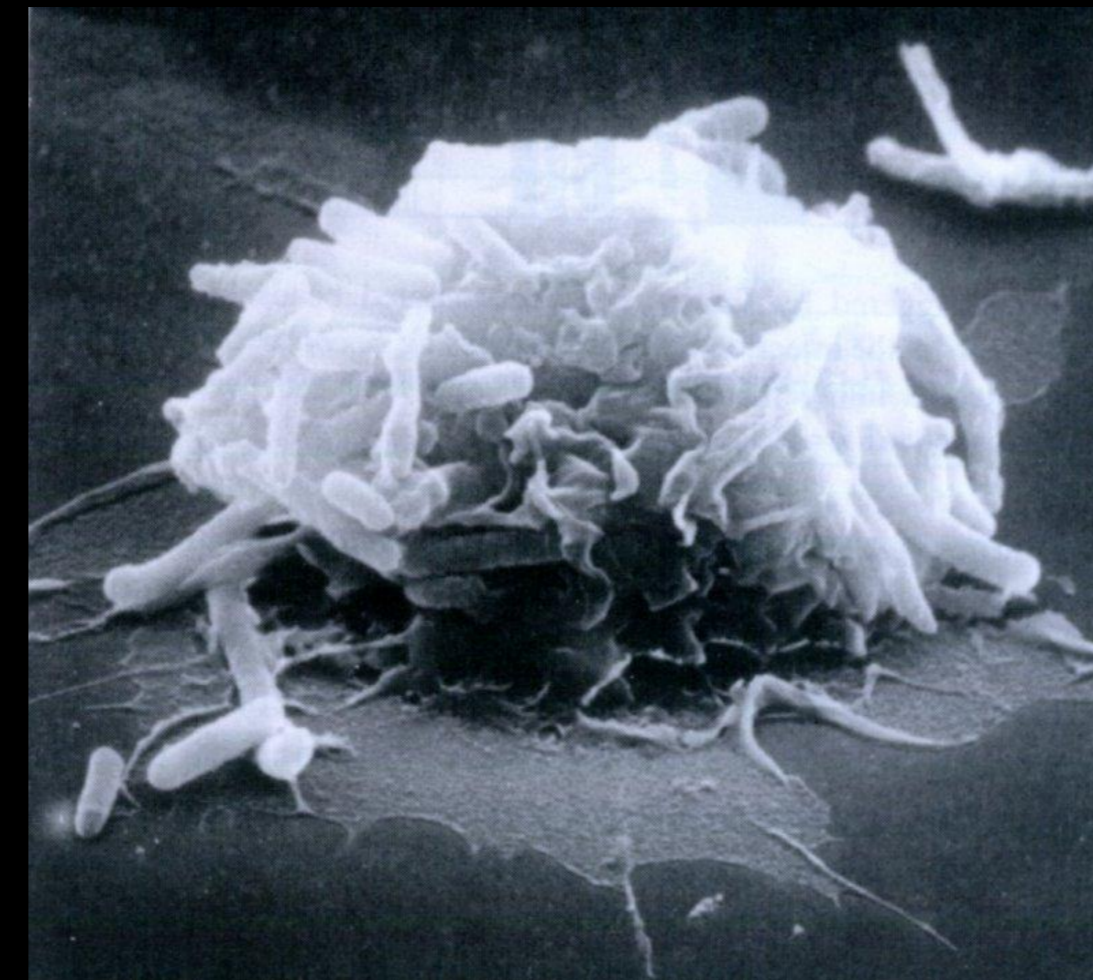


Figure 3: mast cell under electron microscope

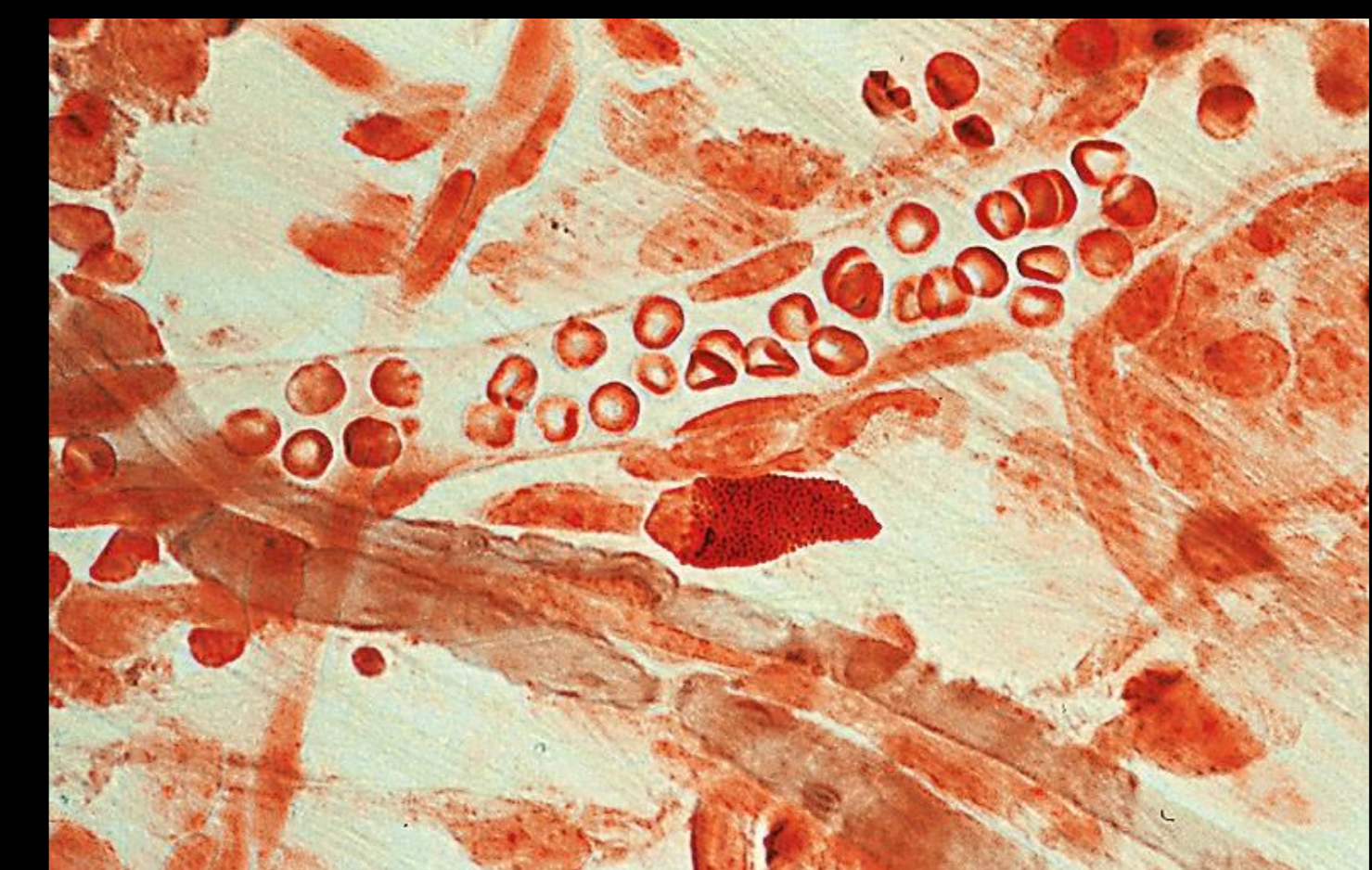


Figure 4: mast cells, vessel and nerve in a tissue

Intra-articular chronic inflammatory or degenerative conditions, and above all arthrosis (fig.3), synovitis and capsulitis are the most frequently observed pathologies in the field of the temporomandibular joint disorders (TMJD). Such conditions result in painful symptoms, TMJ functional limitations, jaw locking and tenderness/pain of the masticatory muscles, especially in the acute stages of the disease. The treatment management of this group of disorders still represent a true challenge for clinicians.

Aim

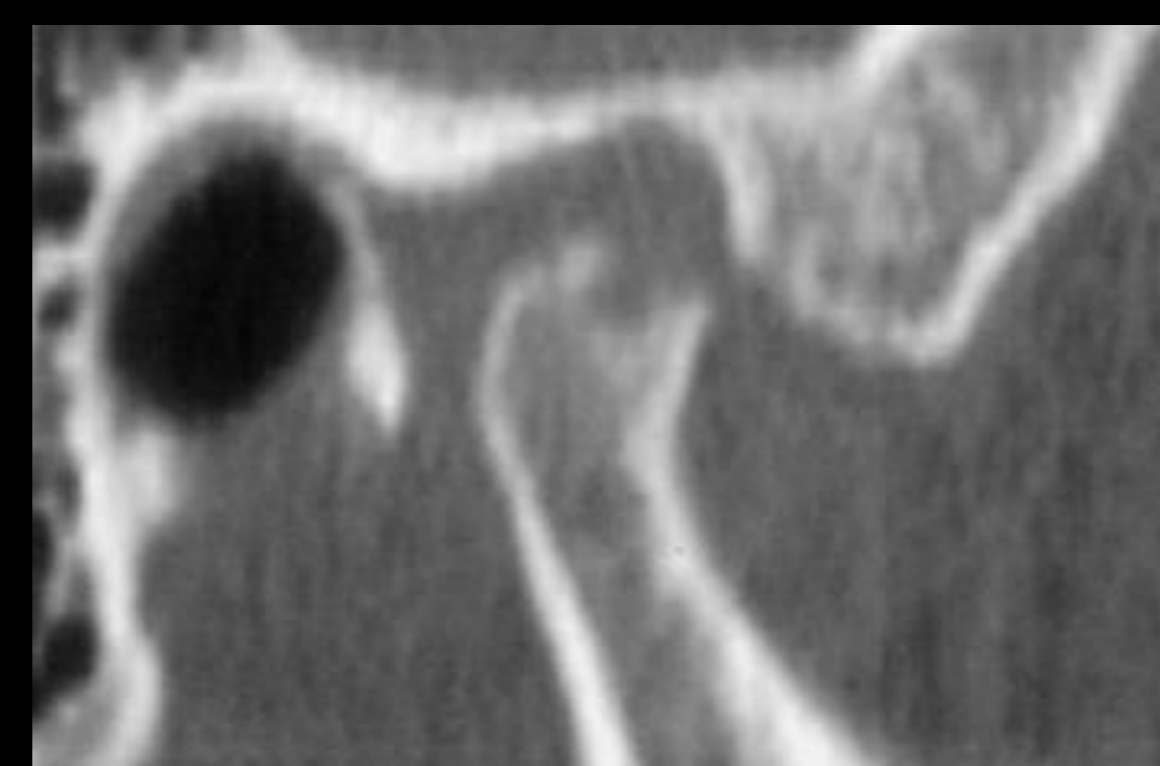
The aim was to compare the efficacy of PEA and non-steroidal anti-inflammatory drugs (NSAID) in the treatment of pain caused by temporomandibular joint disorders (TMJD).

Materials and Methods

The sample was recruited among a group of 120 patients referred to Dental Department of the University of Bologna. In this group were selected 25 patients (17 female and 8 male) aged 24-54, affected by osteoarthritis and synovitis (fig. 5-6), who had been classified in Axis I, group III of the Research Diagnostic Criteria for TMD (RDC/TMD)⁸. A blind randomized clinical trial was conducted dividing these patients in two groups giving both a 14 days pharmacological therapy. Group A (13 subjects) received PEA (Normast, Epitech Group, Padova, IT) 300 mg in the morning and 600 mg in the evening the first week and then 300 mg twice a day for another week. Group B (12 subject) took a NSAID (ibuprofen 600 mg) 3 times a day for 2 weeks. Every patient registered the intensity of their spontaneous pain using Visual Analogue Scale (VAS) twice a day (in the morning and evening) noting data in a diary. Maximum mouth opening was registered by a blind operator at the beginning and at the end of the treatment.

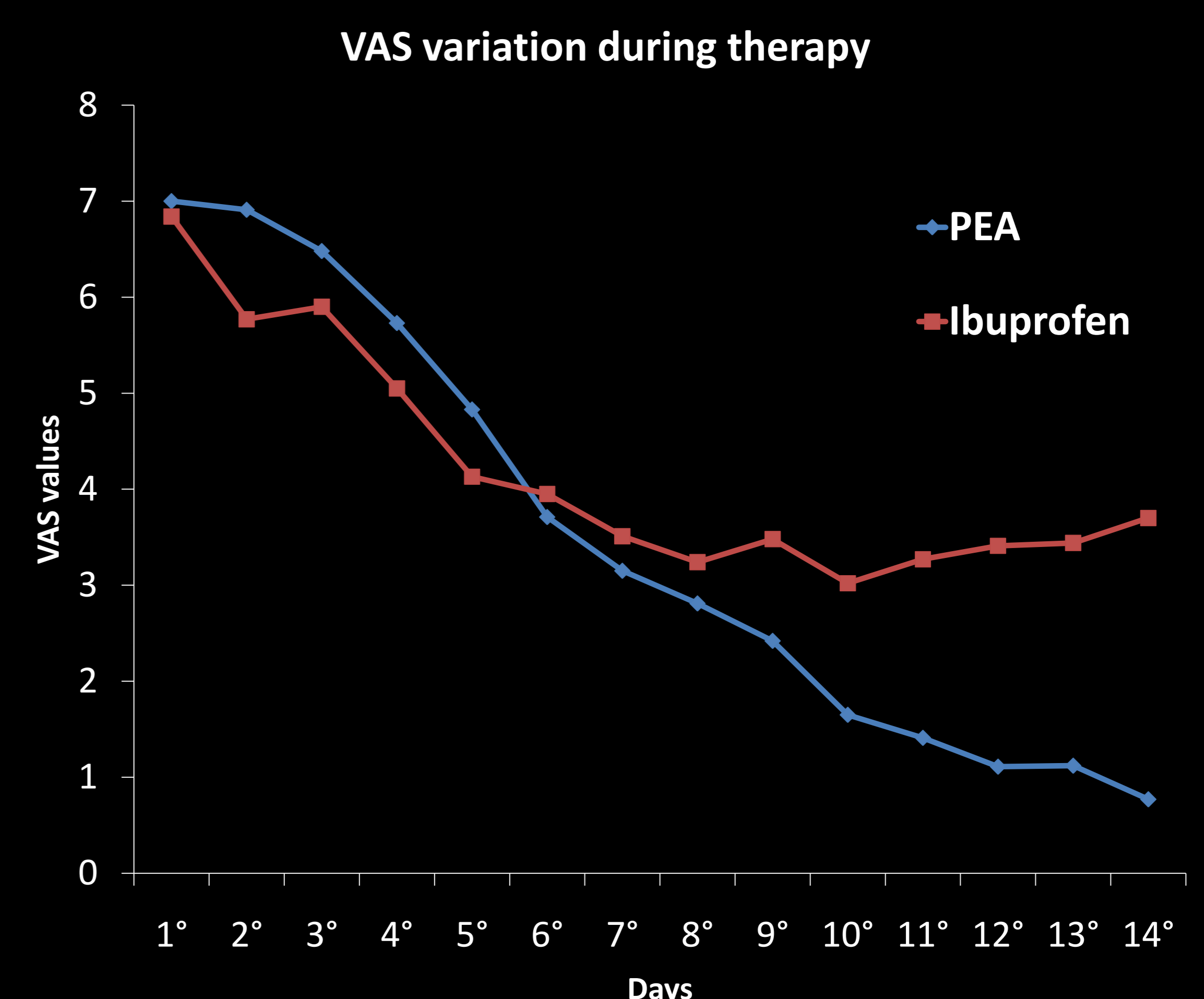


Figures 5 and 6: MR and CT of TMJ's osteoarthritis



Results

Mann-Whitney test was used to compare the course of pain during treatment. Pain decrease after two weeks of treatment was significantly higher in group A (PEA) than in group B (NSAID) ($p=0.0001$); masticatory function improves more in group A than in Group B ($p=0.0001$).



Discussion

Mast cells are a normal constituent of the synovium and expand strikingly in a range of joint diseases. Because currently available anti-rheumatic therapies remain inadequate to guarantee patients with inflammatory arthritis control of disease free of unacceptable toxicity, the mast cell may represent an interesting target for future drug development⁹. The endogenous nature of PEA prevents the side effects that other drugs bring about.

Conclusions

Our preliminary data suggest that PEA is a non-gastrolesive effective analgesic with a longer half-life than NSAID (12 versus 4 hours) so it is an eligible alternative tool to treat TMJ's pain. Confirmatory studies with a larger sample size are necessary.

Bibliography

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