

Neural therapy in rheumatoid arthritis patients in combination with ozone therapy

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Neural therapy

- is the diagnostic and therapeutic application of local anesthetics with reversible effects on neurological [1,2] and **immunological** receptors [3]
- local anesthetics are immun-modulators to be applied locally
- injecting drugs is a medical art of healing

[1] **Fleckenstein** A (1953) Über den Wirkungsmechanismus peripher schmerzzeugender sowie lokalanästhetischer Stoffe. Acta neurovegetativa. 7: 94–105

[2] **Niesel** HC, Van Aken H (2003) Regionalanästhesie. Thieme

[3] **Weinschenk** S (2020) Handbuch der Neuraltherapie. 2. Aufl. Thieme

facts about joint inflammation

- molecular mimicry by pathological associated molecular pattern (**PAMPs**) like antigen and heat shock proteins
- presentation and/or activation of TH-17 and CD 8+/cytotoxic cell
- secrete TNF- α and IL-1 β and cross-reaction as inflammation on **insertions** or
- **synovitis** by endovascular increased **permeability**

[1] **Abbas** AK, Lichtman AH, Pillai S (2015) Cellular and Molecular Immunology. 8.ed. Elsevier

[2] **Miehle** W (1999) Rheumatoide Arthritis. Georg Thieme, Stuttgart NewYork

facts about reactive synovitis

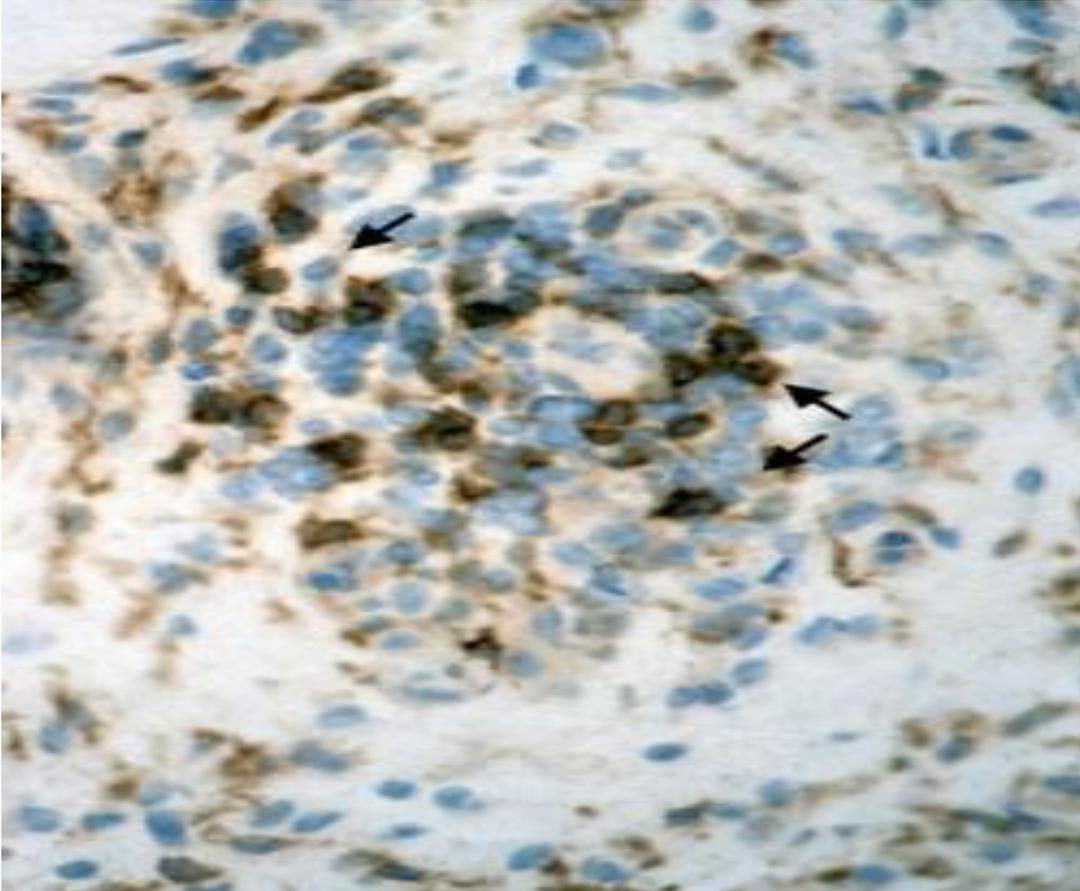


Abb. aus [3]

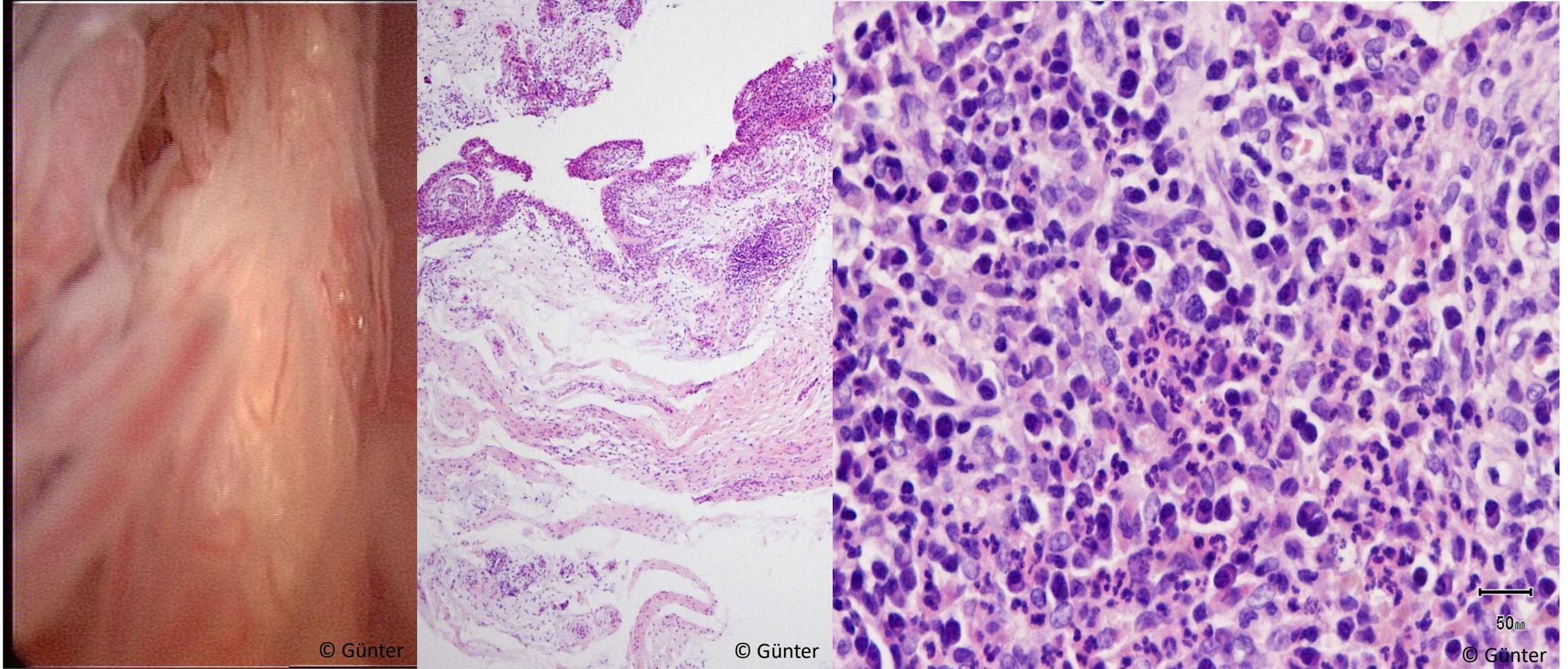
- damage associated molecular pattern (**DAMPs**) increased [1]
- additional CD 4+ (Fig.) and **mastcells** are activated
- degree of severity depends on **histamin, IL-1-RA** [2] and other anti-inflammatory IL [3]

[1] **Abrams** GD et al. (2016) Association of synovial inflammation and inflammatory mediators with glenohumeral rotator cuff pathology. J Shoulder Elbow Surg 25(6): 989-97

[2] **Lewthwaite** J et al. (1994) The effect of recombinant human interleukin 1 receptor antagonist... J Rheumatol. 21(3): 467-72

[3] **Ristow** G (2003) Immunophänotypisierung des entzündlichen Infiltrates der Arthrose assoziierten Synovialitis. Dissertation

arthroscopic and histological picture of synovitis



[1] **Krenn** et al. (1996) Immunohistochemical analysis of proliferating and antigen-presenting cells in rheumatoid synovial tissue. *Rheumatol Int* 1996; 15(6):239-47

[2] **Krenn** V (2006) Diagnostische Wertigkeit der Synovialitis, Bamberg

effects of Neural therapy

- local anesthetics induce intracellular anti-inflammatory effects via **G protein-coupled receptors** (Hollmann, Durieux et al.) [1]
- local anesthetics inhibits **IL-1** secretion and stimulates **IL-1-RA** in epithelial cells [2]
- local anesthetics blocks **TNF- α** induction in endothelial cells [3]
- but the effect of local anesthetics on synovial cells is unclear

[1] Weinschenk S (2010) Handbuch der Neuraltherapie. Elsevier

[2] Lahav M et al. (2002) Clin. Exp Immunol 127(2): 226-33

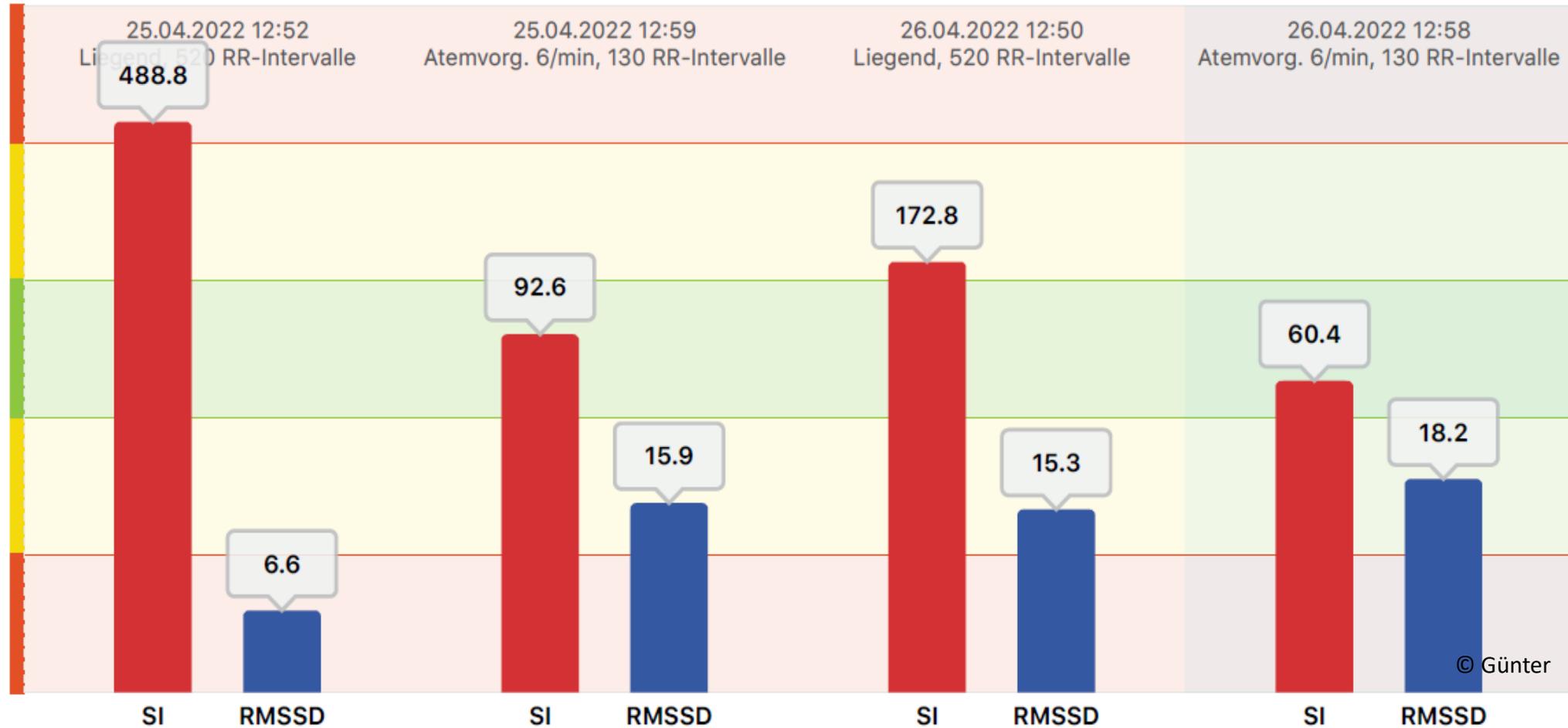
[3] Piegeler T et al. (2014) Anesthesiology. 120(6): 1414-28

outcome after Neural therapy

- reduce local, segmental or regional pain in cases of higher sympathicotonus like traumatic pain, complex regional pain ...
- better activity of life (ADL), other tests of motion in cases with diff. locking, osteopathic lesion ...
- moderate results in cases of psychosomatic pain, inflammation from dental foci and **rheumatoid joint inflammation**

sympathicolysis after Neural therapy

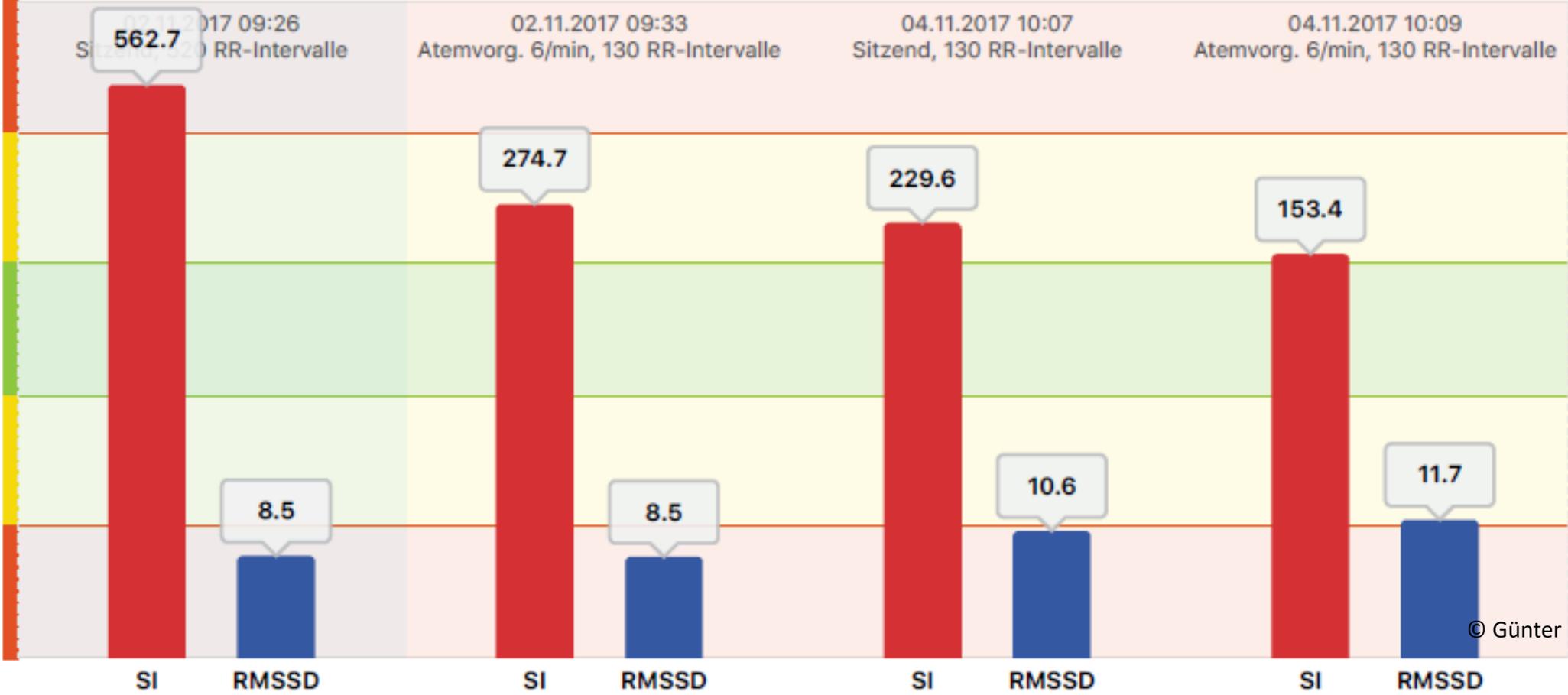
Hauptparameter der VNS Analyse



SI check a day later

bad result

Hauptparameter der VNS Analyse



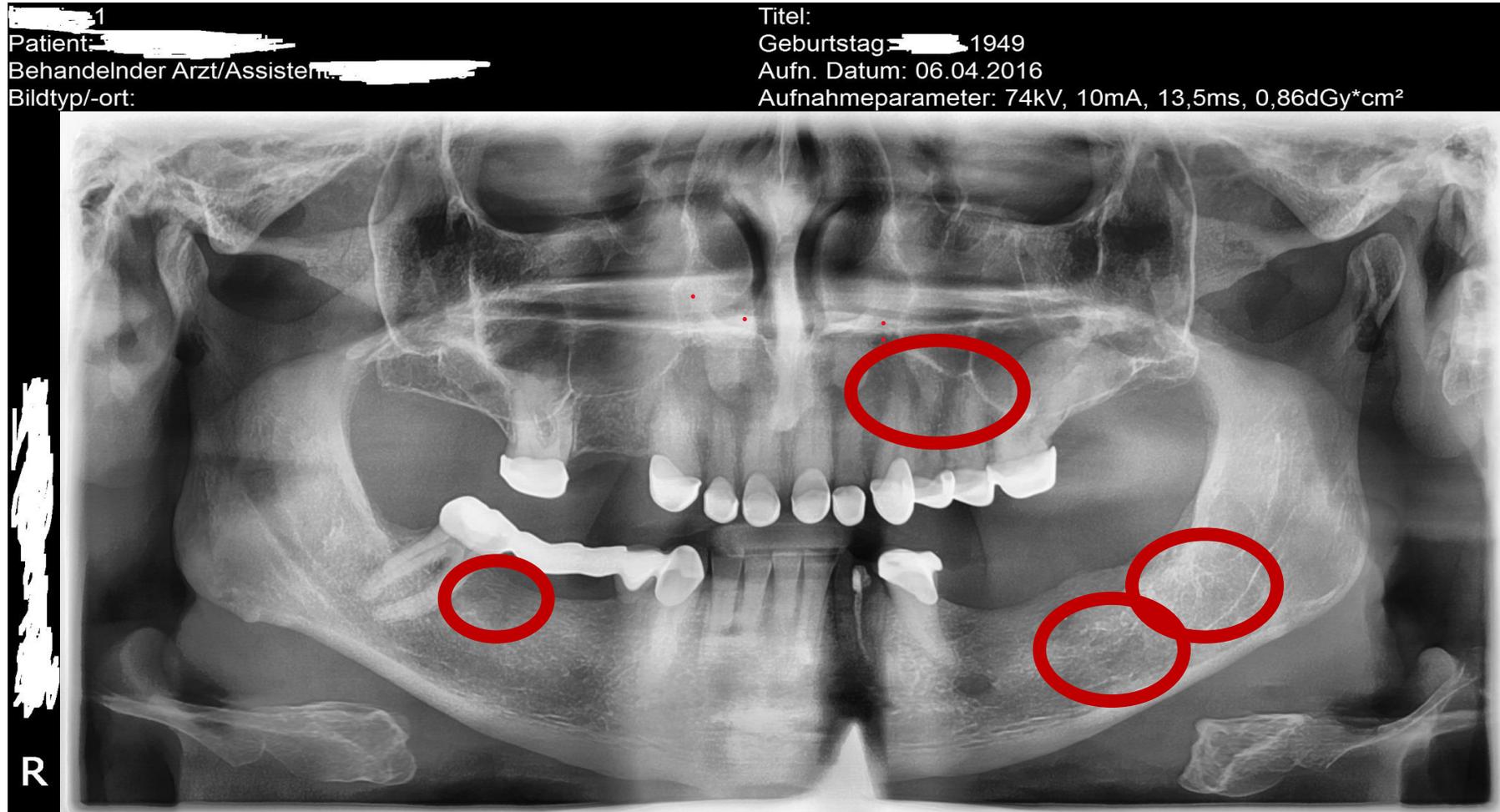
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SI check two days later

how to improve the effects of Neural therapy?

- cases with inflammation like osteitis or necrosis of jaw bone need
 - surgical revisions

how to improve the effects of Neural therapy?



how to improve the effects of Neural therapy?

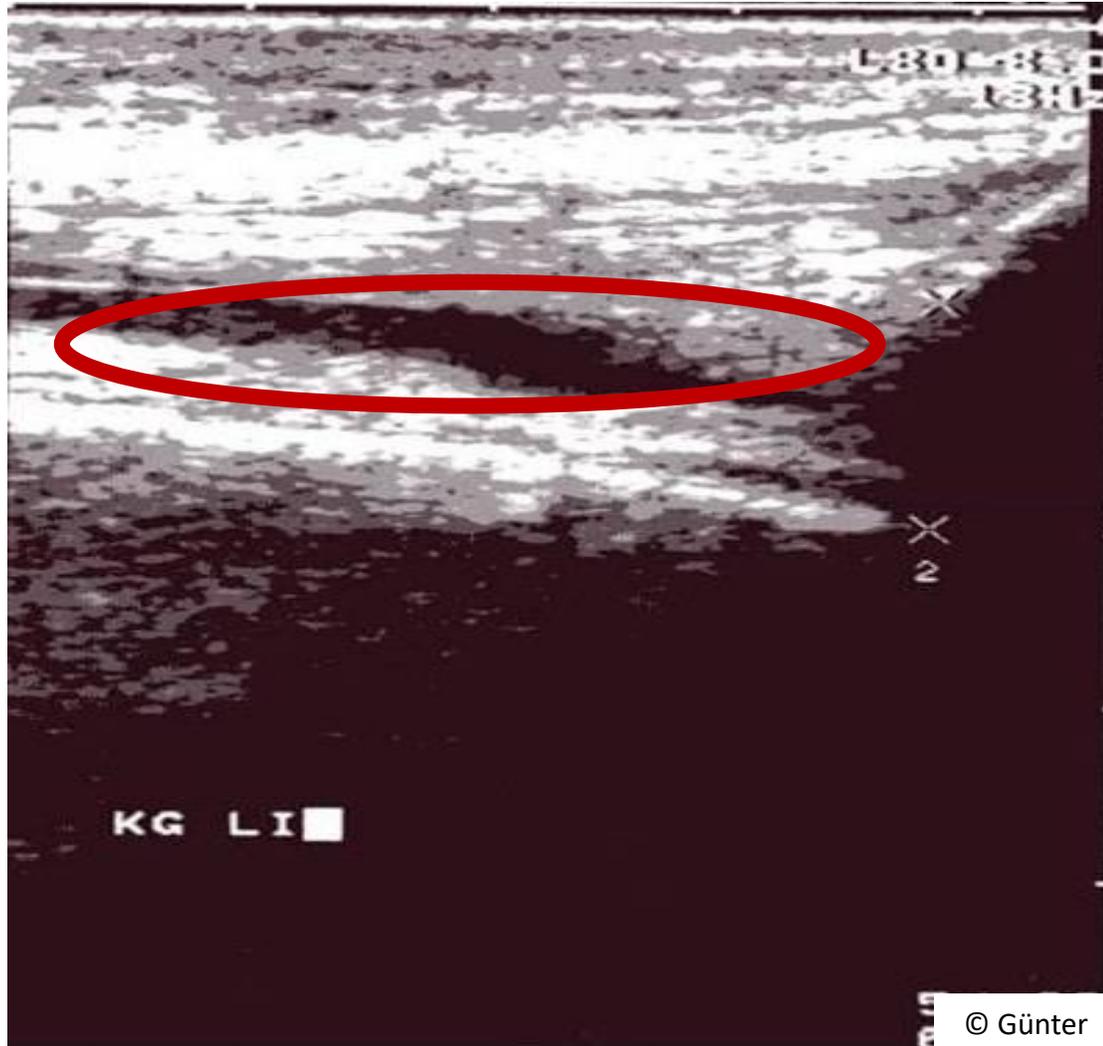
- cases with inflammation like osteitis or necrosis of jaw bone need
 - surgical revisions
- in cases of rheumatism use additional therapy with
 - ozone therapy

suggest to combine

Neural therapy in joints

- manifest finding (capsule pattern)
- clear finding in ultrasound (effusion or synovial thickening)
- or optional in MRI

effusion or tendovaginitis in ultrasound or MRI



suggest to combine

Neural and ozone therapy in joints

- manifest finding (capsule pattern)
- clear finding in ultrasound (effusion or synovial thickening)
- or optional MRI
- standardized puncture with
 - 1. step: injection of procaine
 - 2. step: injection of ozone 20 µg/ml in one session
 - repetition (2-4 times with increasing dosage to 40µg/ml)

requirement for joint injection

spray-disinfection (2 times)



room without a carpet



sterile material



sterile gloves



napkin



a case of a synovitis in a knee-joint



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- after the written explanation, the patient is partially undressed and positioned

a case of a synovitis in a knee-joint

- there is a two-time spray disinfection



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a case of a synovitis in a knee-joint



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- the injection is best intrapatellar lateral in the knee joint (infrapatellar approach)

a case of a synovitis in a knee-joint



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- 1. step: injection of procaine (5-10ml)

a case of a synovitis in a knee-joint



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- 2. step: injection of ozone
(concentration 20-40 μ g/ml)

a case of a effusion in a knee-joint



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- 1. step
- suprapatellar approach with a little local anesthetics
- 2. step
- puncture the effusion
- 3. step
- injection of procaine follow by ozone (concentration here $30\mu\text{g/ml}$)

a case of frozen shoulder



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- injection in the humeroscapular-joint (dorsal approach)
- here 2. step
- injection of ozone (concentration $30\mu\text{g}/\text{ml}$)

a case of shoulder-impingement by bursitis



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- injection in the subcoracoacromial bursa (cranial approach)
- here 2. step
- injection of ozone (concentration 20 μ g/ml)

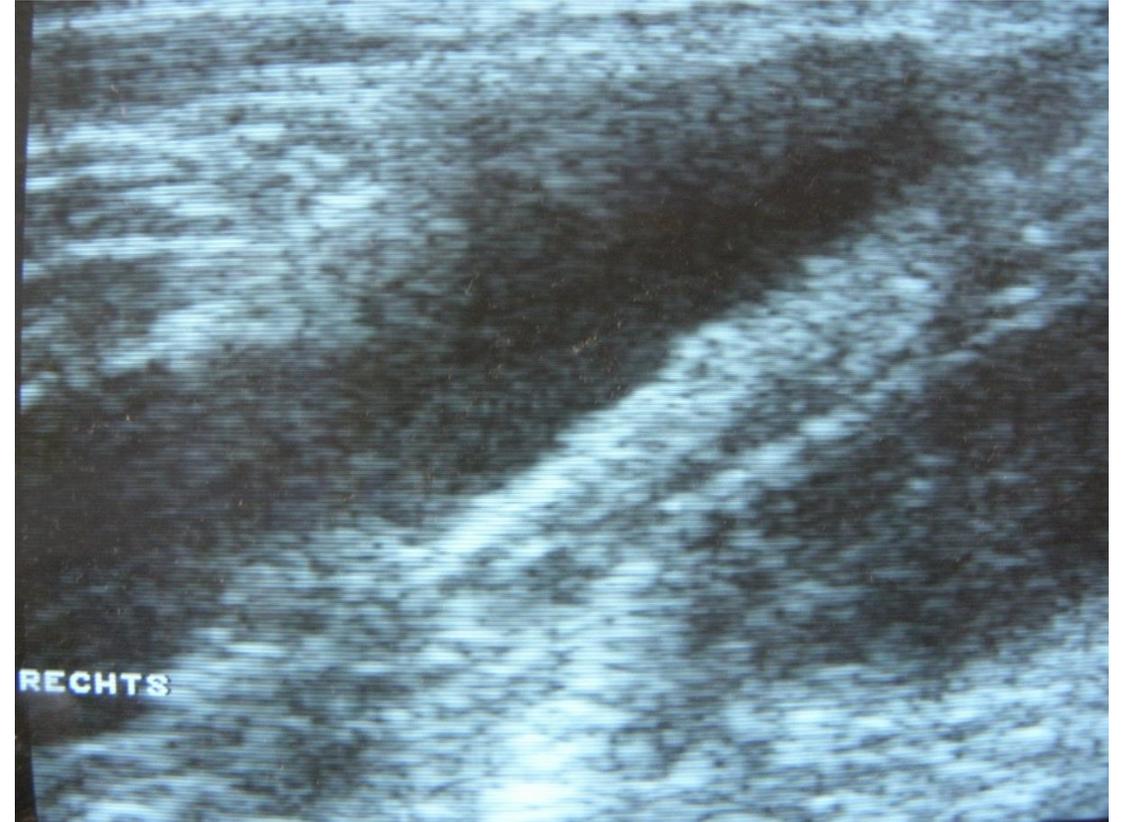
a case of hip-impingement by synovitis



ultrasound supported method



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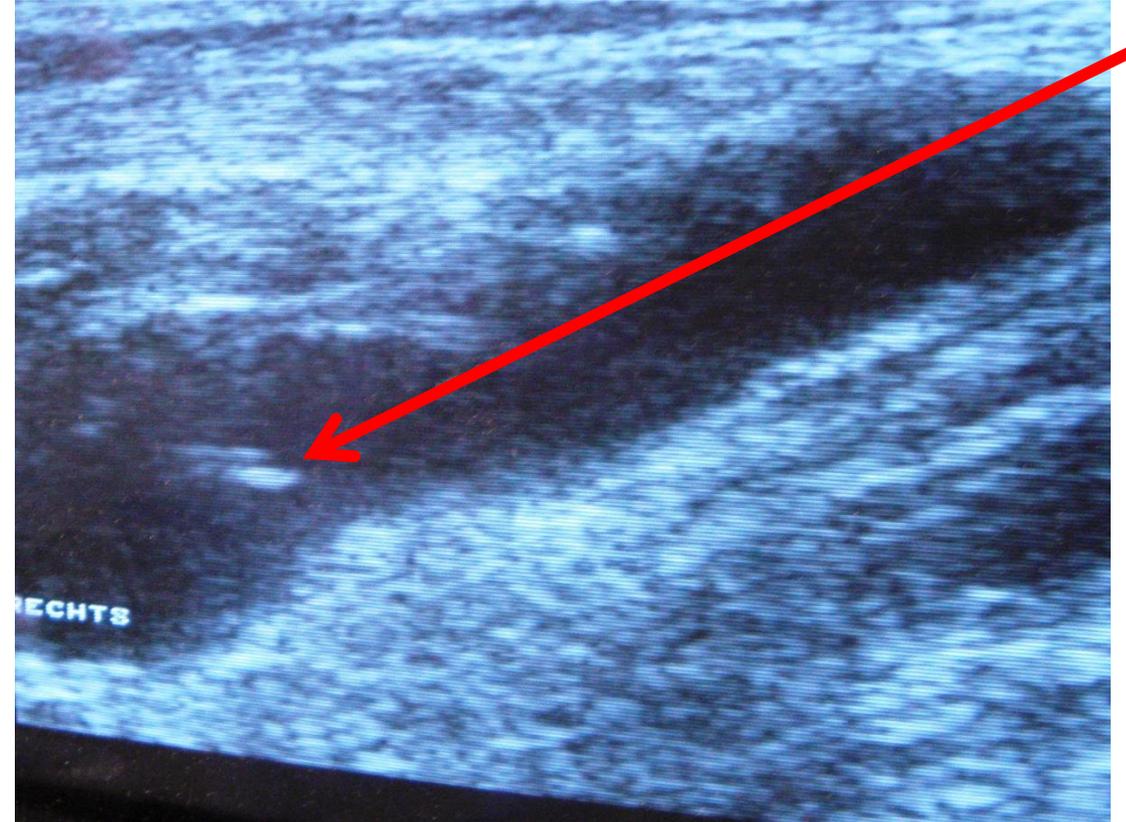


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ultrasound supported method



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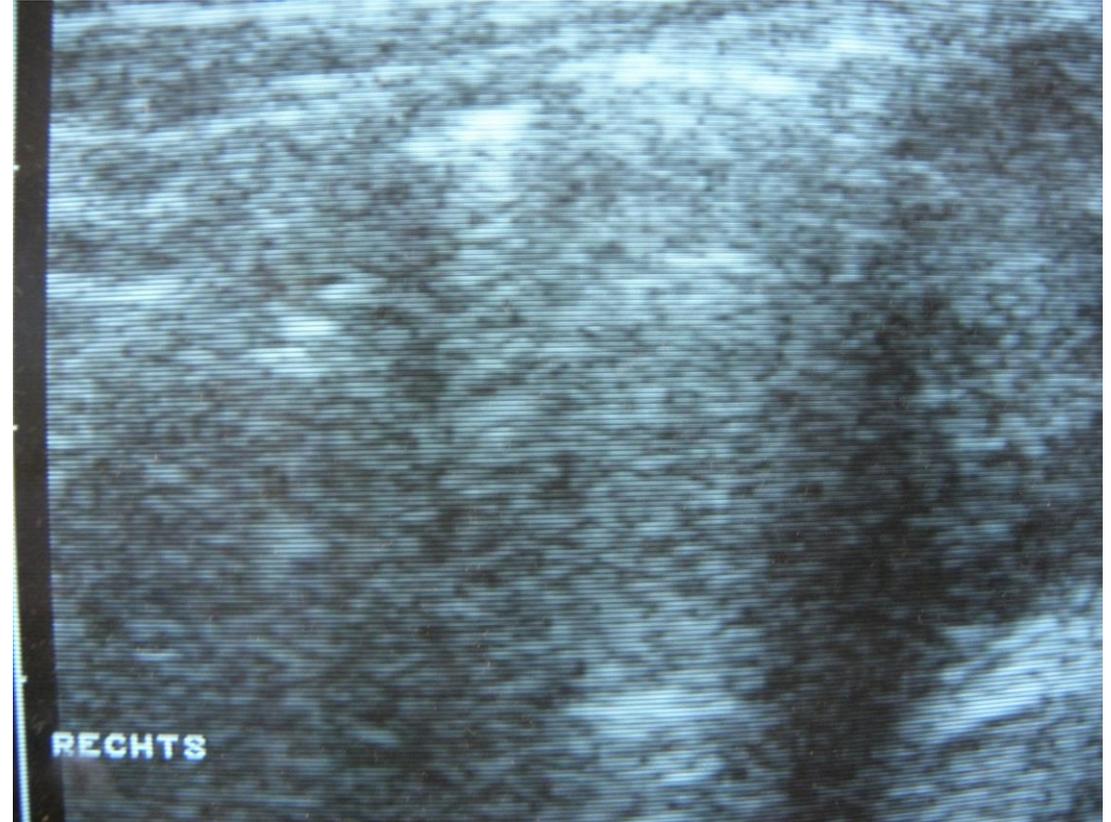


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ultrasound supported method

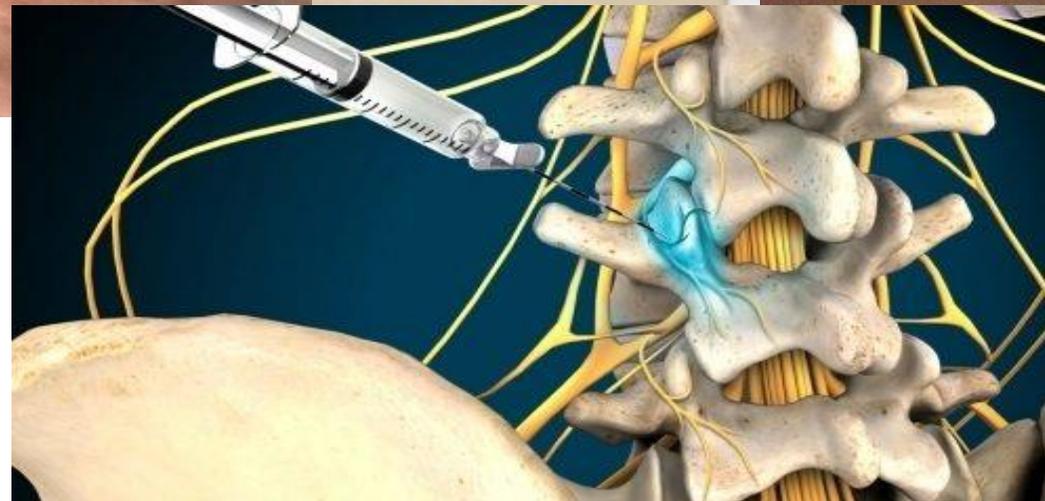
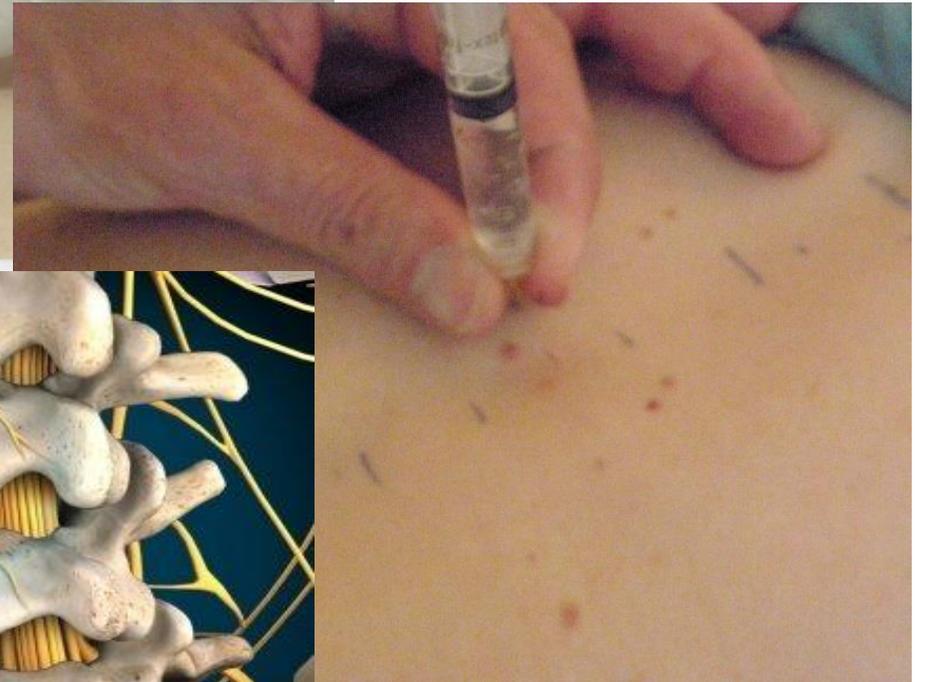


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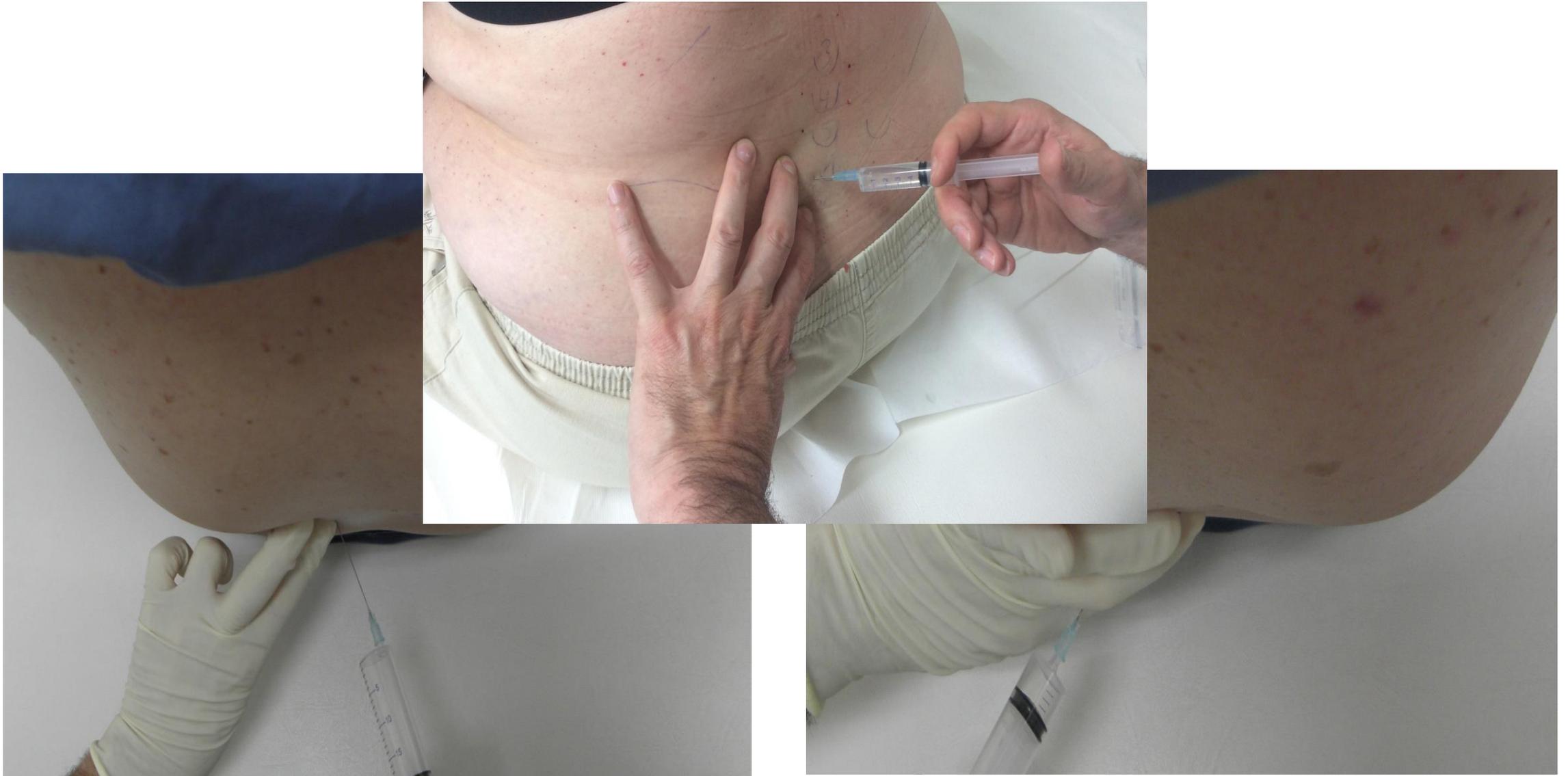


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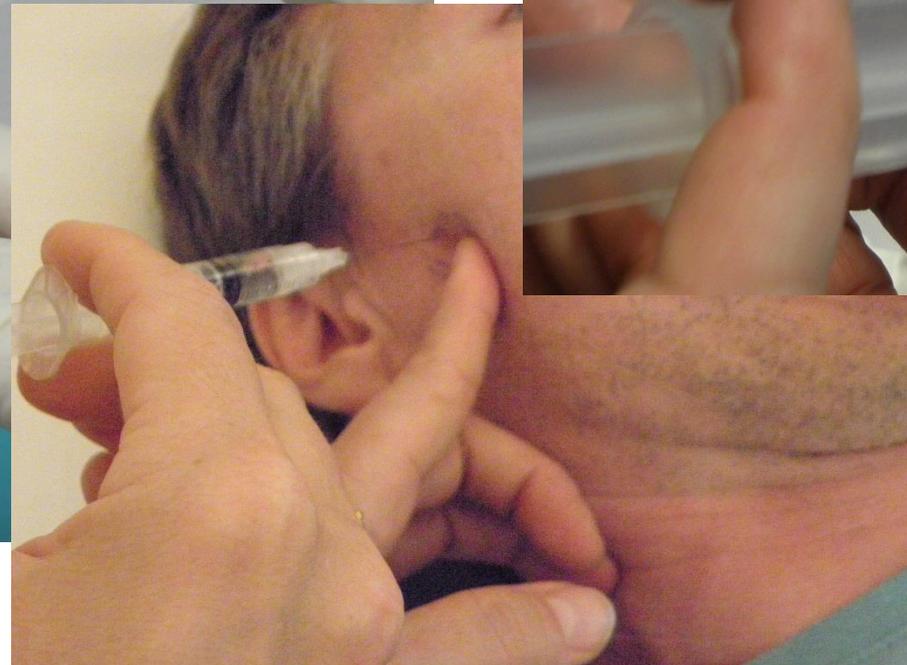
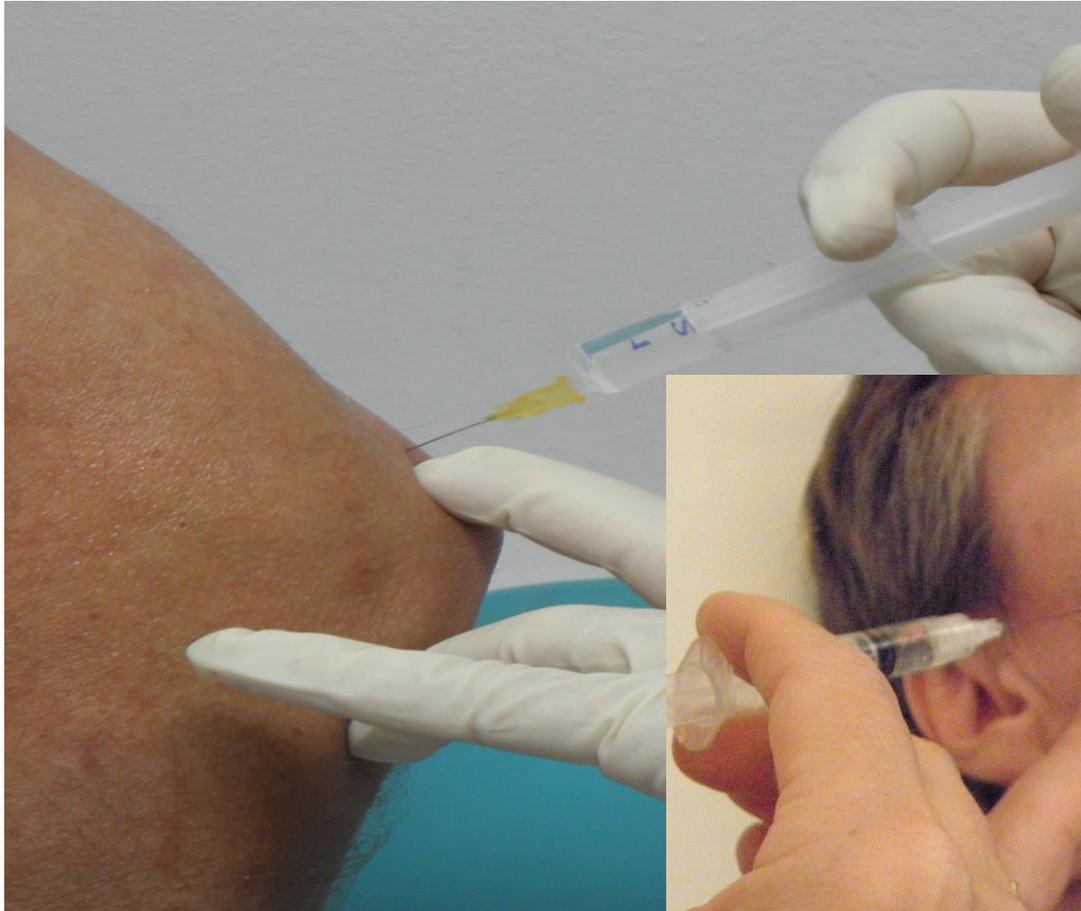
injection of ozone on facet joints (medial branch bloc)



injection of ozone on or in other joints



injection of ozone in or on other joints



outcome after injection therapy in joint inflammation

- reduce joint pain in cases of inflammatory or rheumatic joint pain (1-5 times with increasing dosage 20-40µg/ml)
- better activity of life (ADL), other tests of range of motion in cases with inflammatory pain
- different results in **cases in reactive joint inflammation by osteoarthritis**

facts about osteoarthritis and IL-1-RA

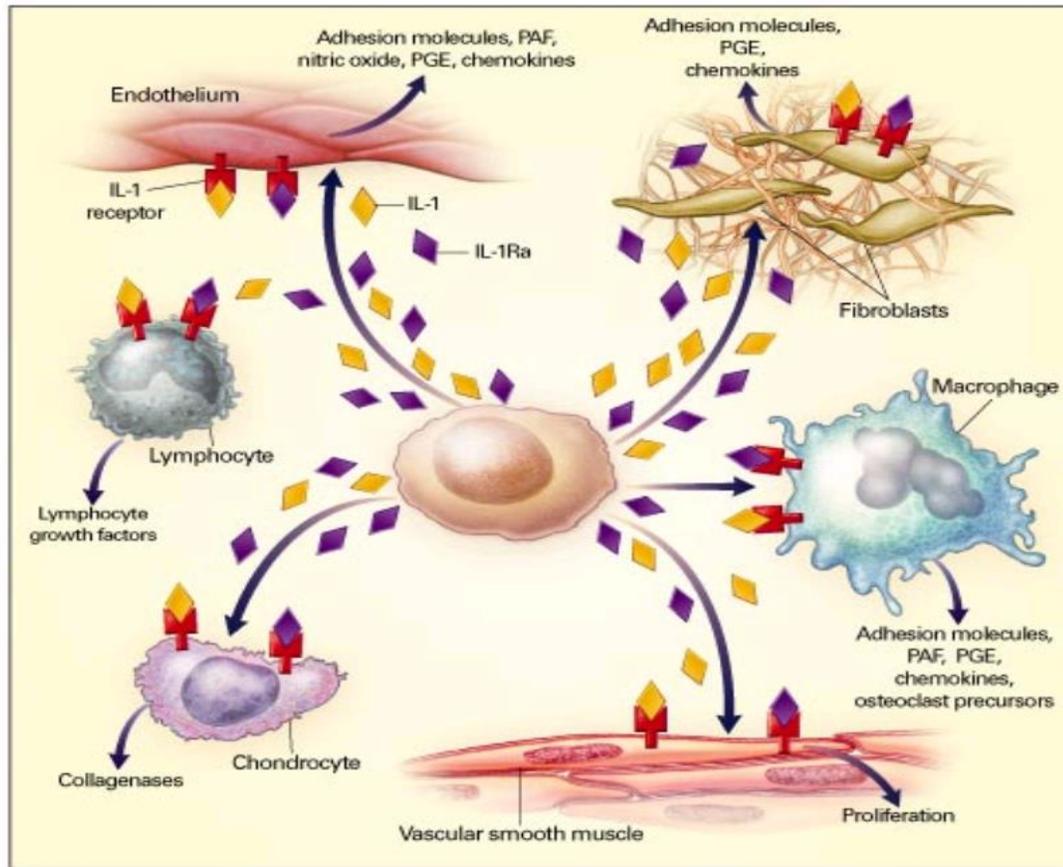


Abb. aus [1]

- IL-1-RA inhibits IL-1-production [2]
- therapeutic trials with intra-articular injections of a humanized IL-1-RA in arthrosis patients as part of placebo-controlled studies however, symptom relief [3]

[1] Dinarello CA. Biologic basis for interleukin-1 in disease. Blood.871996;:2095-147

[2] Schmidt LM (2002) IL-1ra hemmt die IL-1-induzierte IL-6-Produktion Diss

[3] Meßbacher MA (2015) Interleukin 36 α in der Pathogenese entzündlicher Arthritiden. Diss. Nürnberg

how to improve the effects of injection therapy of joint inflammation?

- in cases of cancer, multiple chemical sensitivity, high viral load, mitochondrial dysfunction or fatigue additional therapy with
 - autologous serum with higher IL-1-RA

facts about autologous serum

- increased production of IL-1 occurs in the event of mechanical stimulus and synovitis [1]
- depending on the surface stimulus and incubation (e.g. 37°C) leukocytes increase the amounts of IL1-RA [2]
- if there is a lack of IL-1-RA, inflammatory processes are set in motion [3]

[1] https://radimed.de/fileadmin/_migrated/content_uploads/orthokin.pdf

[2] **Meijer** et al. (2003) The production of anti-inflammatory cytokines in whole blood by physico-chemical induction. *Inflammation Research* 52: 404-7

[3] [https://www.printo.it/pediatric-rheumatology/DE/info/19/Defizienz-des-Interleukin-1-Rezeptor-Antagonisten-\(DIRA\)](https://www.printo.it/pediatric-rheumatology/DE/info/19/Defizienz-des-Interleukin-1-Rezeptor-Antagonisten-(DIRA))

suggest to combine the injection joint therapy with autologous serum

- manifest finding after injection therapy with procaine and ozone (capsule pattern, facultative effusion or synovial thickening)
 1. standardized preparing autologous serum
 2. puncture with procaine
 3. injection of ozone and
 4. than autologus serum in one session

requirement

spray-disinfection (2 times)



room without a carpet



sterile material



sterile gloves



napkin



incubator



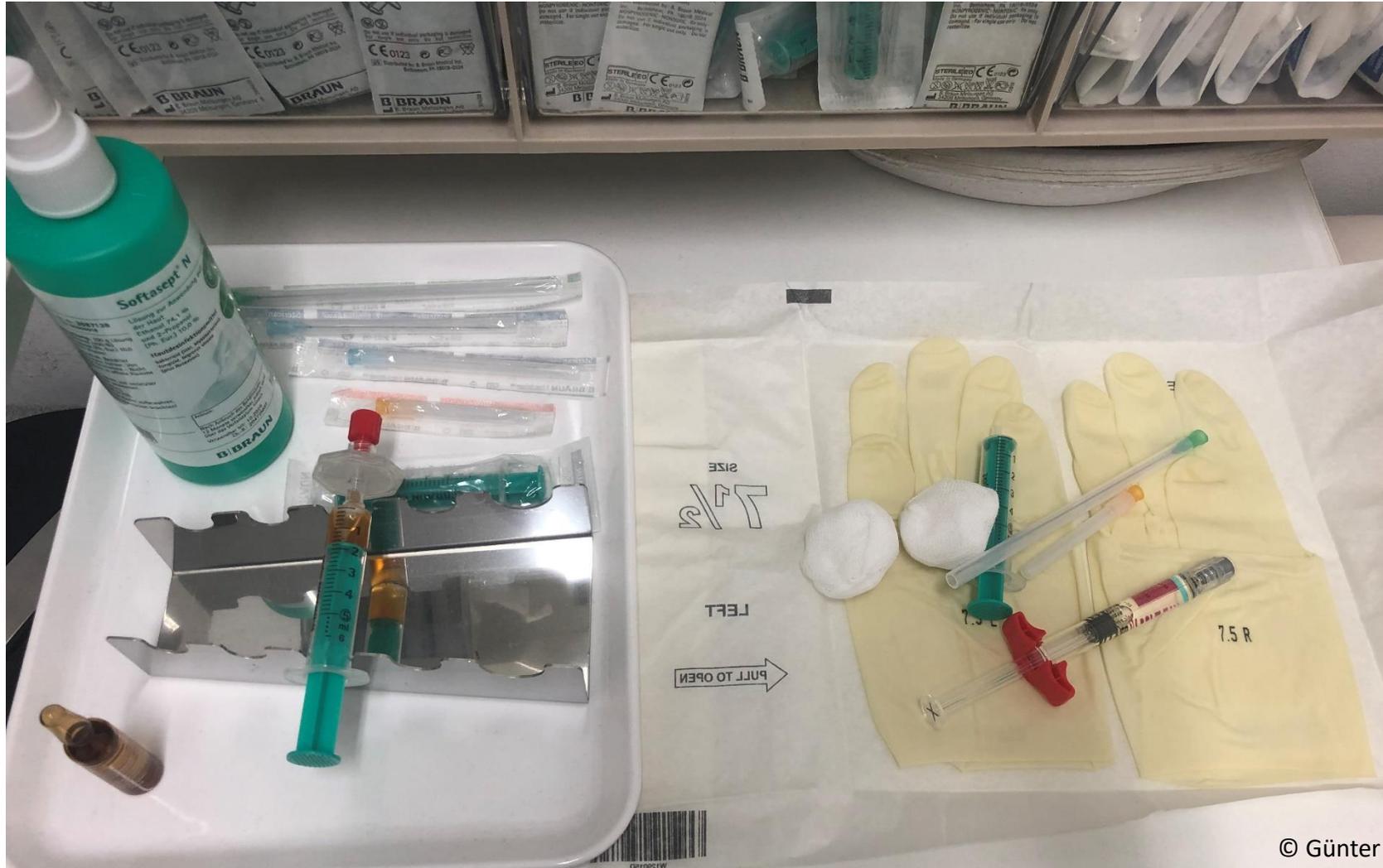
centrifuge



filter



standardized procedure



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palpation and injection of procaine



injection of ozone and serum



injection of procaïn and serum



palpation and injection of procaine



injection of hyaluronacid and serum



injection of procaïn and serum



**Thank You
for kind attention**

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