Le discopathie active

Pr Francois Rannou,

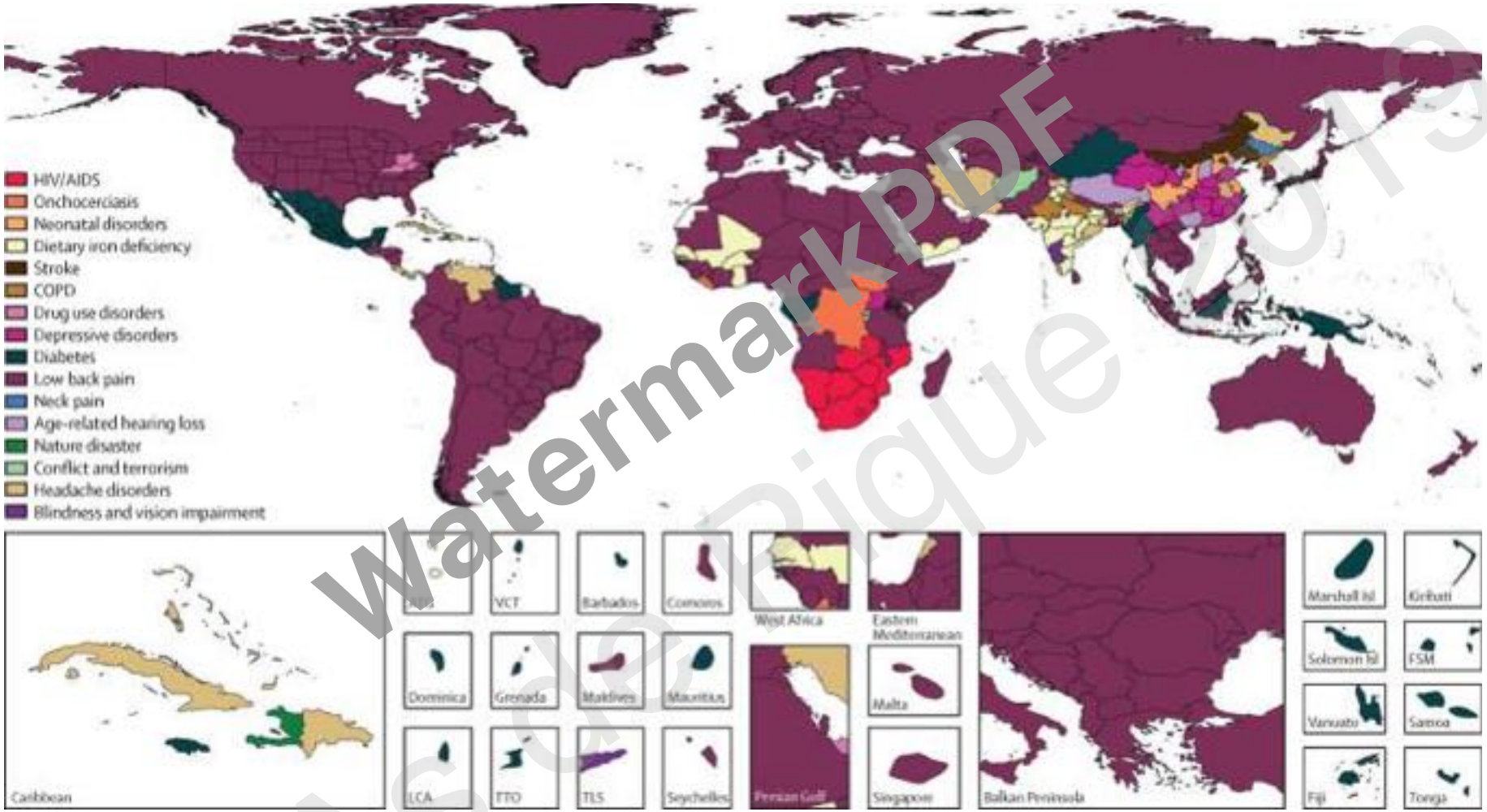
Service de MPR, Institut de Rhumatologie, Pôle ostéoarticulaire

Hopital Cochin, AP-HP

INSERM U1124

Université Paris Descartes

Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017



Lancet 2018 Nov 10; 392(10159): 1789–1858.

L'approche anglosaxonne!

CLINICAL GUIDELINES

Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society

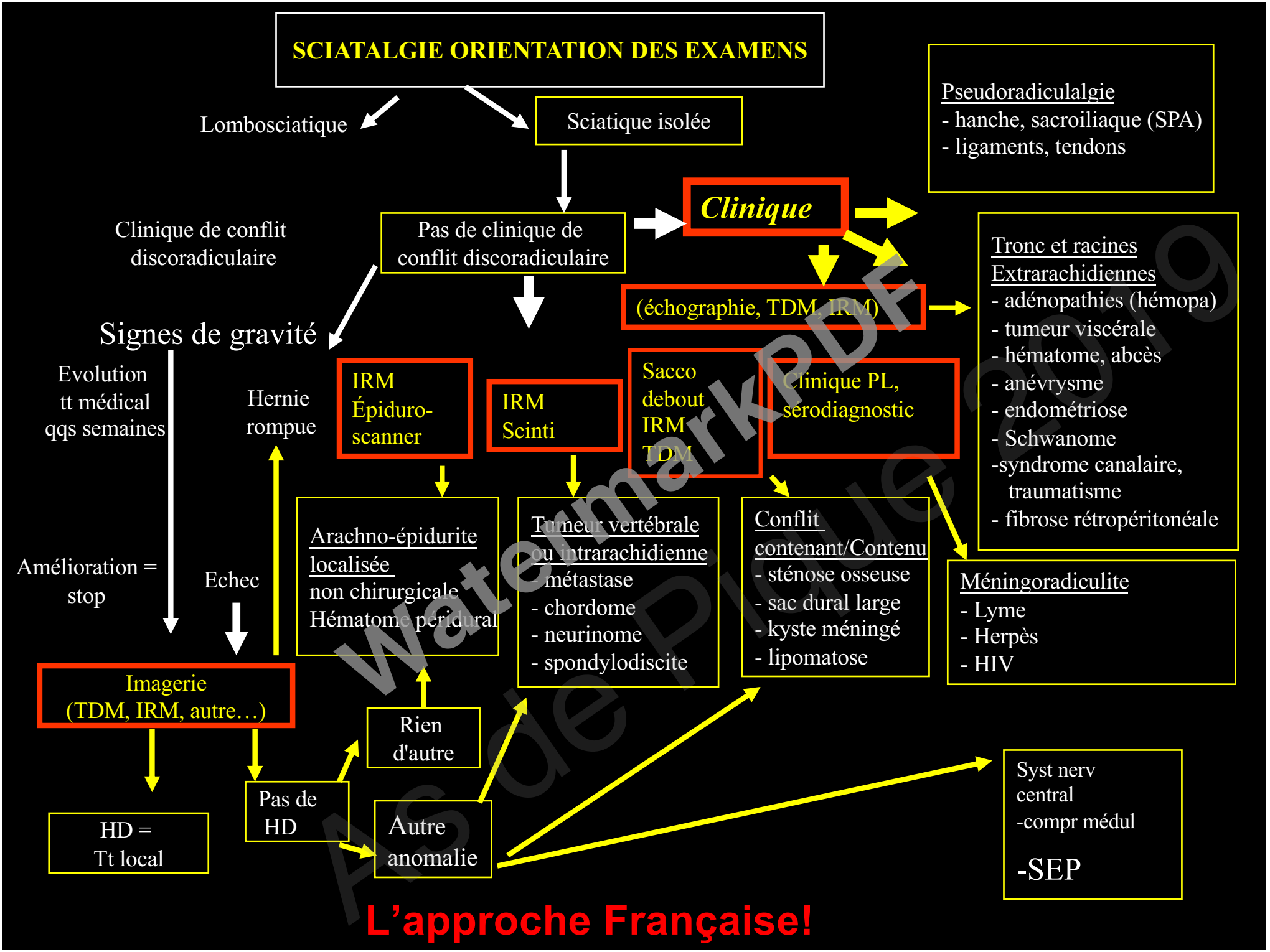
Roger Chou, MD; Amir Qaseem, MD, PhD, MHA; Vincenza Snow, MD; Donald Casey, MD, MPH, MBA; J. Thomas Cross Jr., MD, MPH; Paul Shekelle, MD, PhD; and Douglas K. Owens, MD, MS, for the Clinical Efficacy Assessment Subcommittee of the American College of Physicians and the American College of Physicians/American Pain Society Low Back Pain Guidelines Panel*

Recommendation 1: Clinicians should conduct a focused history and physical examination to help place patients with low back pain into 1 of 3 broad categories: nonspecific low back pain, back pain potentially associated with radiculopathy or spinal stenosis, or back pain potentially associated with another specific spinal cause. The history should include assessment of psychosocial risk factors, which predict risk for chronic disabling back pain (strong recommendation, moderate-quality evidence).

Non specific low back pain!!!

La porte ouverte au trucopathe!!!

Ann Intern Med. 2007;147:478-491.



Phénotypage des patients par la lésion

- Instabilité segmentaire, syndrome jonctionnel
- CLE, CLR
- Discopathie active
- Scoliose et troubles statiques du rachis, insuffisance musculaire
- Discopathie isolée du sujet jeune, discolyse rapide
- Syndrome articulaire postérieur

Sinon….

Ces patients ont les critères d'inclusion de la plupart des études d'EBM sur le réentrainement à l'effort, le traitement phare des patients etiquetés « non specific low back pain »!

Fameux traitement découlant du fameux modèle biopsychosocial!

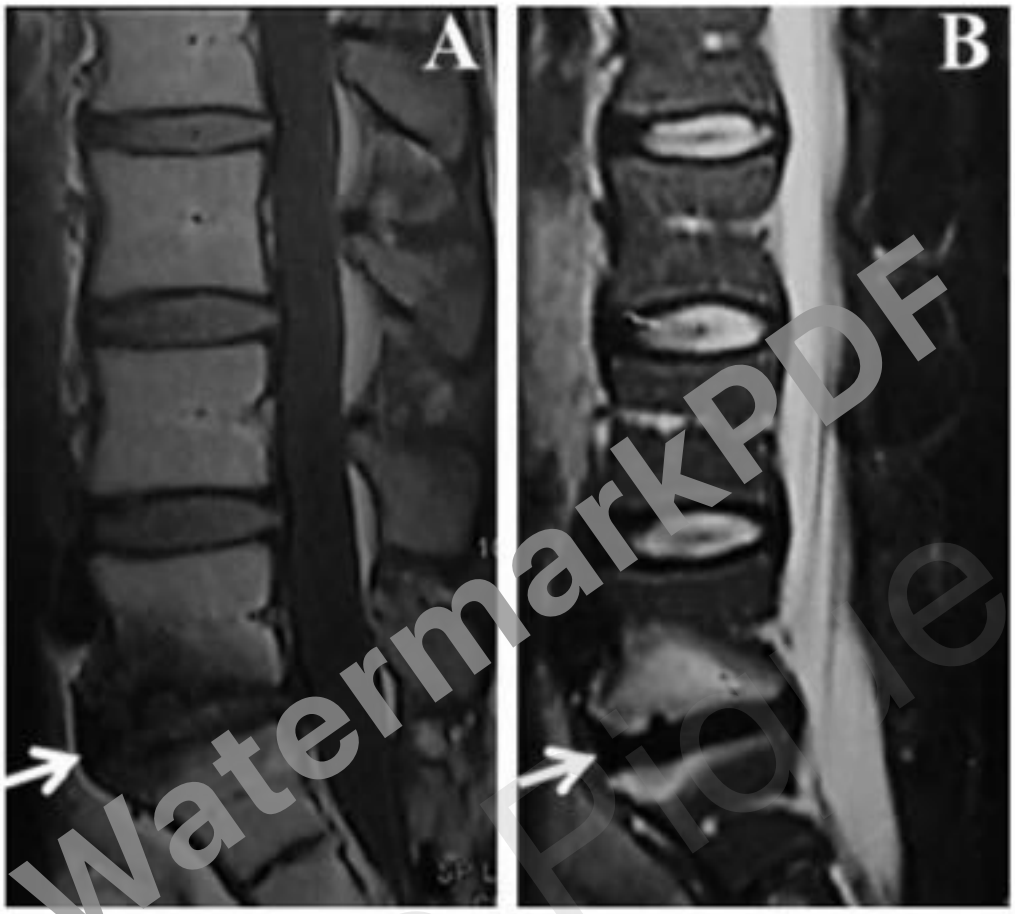


Figure 1. Magnetic resonance imaging of the lumbar spine performed prior to intradiscal corticosteroid injection, showing typical features of vertebral end-plate Modic I signal changes at the L5–S1 level (**arrows**). Hypointense and hyperintense signal changes are visualized in T1-weighted (**A**) and STIR-weighted (**B**) sequences, with edema involving the adjacent vertebral end-plates and bone marrow.

Biomarqueurs

- **IRM**
- **Clichés dynamiques dans le temps et dans l'espace!**
- **EOS**

REVENONS A LA LESION!!!

1) Limite du modèle biopsychosocial : *oublier la lésion*
2) Limite du concept de l'inutilité de l'imagerie dans la lombalgie commune : *IRM non spécifique*

▼

IRM d'une population asymptomatique

Signification de ce signal IRM ?

Ce signal IRM : hypo T1 et hyper T2 (Modic I)
n'est 1) ***Quasiment jamais observé chez les sujets asymptomatiques***
2) Présent chez 5 à 40% des lombalgiques Chroniques
3) Facteur prédictif de bonne réponse à la chirurgie
Donc probablement prédictif d'un disque symptomatique

Vital et al , *Spine* 2003; Weishaupt et al, *Radiology* 1998

Signification de ce signal IRM ?

- IL-6, TNF, IL-1
- PGE2
- NO

Noir en T1

Blanc en T2

Activité inflammatoire locale!!!

Arthritis & Rheumatism (Arthritis Care & Research)
Vol. 57, No. 7, October 15, 2007, pp 1311–1315
DOI 10.1002/art.22985

ORIGINAL ARTICLE

High-Sensitivity C-Reactive Protein in Chronic Low Back Pain With Vertebral End-Plate Modic Signal Changes

FRANÇOIS RANNOU,[1] WALID OUANES,[1] ISABELLE BOUTRON,[2] BIANCA LOVISI,[1] FOUAD FAYAD,[1] YANN MACÉ,[1] DIDIER BORDERIE,[1] HENRI GUERINI,[1] SERGE POIRAUDEAU,[1] AND MICHEL REVEL[1]

[1]François Rannou, MD, PhD, Walid Ouanes, MD, Bianca Lovisi, MD, Fouad Fayad, MD, Yann Macé, MD, Didier Borderie, MD, Henri Guerini, MD, Serge Poiraudeau, MD, PhD, Michel Revel, MD: Assistance Publique–Hôpitaux de Paris, Université René Descartes, Groupe Hospitalier Cochin, Paris, France; [2]Isabelle Boutron, MD, PhD: Assistance Publique–Hôpitaux de Paris, Université Paris VII, Groupe Hospitalier Bichat-Claude Bernard, Paris, France.

Assessment of Ankylosing Spondylitis Criteria in Patients with Chronic Low Back Pain and Vertebral Endplate Modic I Signal Changes

CHRISTELLE NGUYEN, IMAD BENDEDDOUCHE, KATHERINE SANCHEZ, MARYLÈNE JOUSSE, AGATHE PAPELARD, ANTOINE FEYDY, MICHEL REVEL, SERGE POIRAUDEAU, and FRANÇOIS RANNOU

ABSTRACT. ***Objective.*** Patients with chronic low back pain (cLBP) and vertebral endplate Modic I signal changes on lumbar magnetic resonance imaging (MRI) have clinical features that could mimic inflammatory back pain related to spondyloarthritis (SpA) and/or ankylosing spondylitis (AS). We aimed to assess whether such patients fulfilled criteria for SpA and/or AS.

Methods. For 5 months in 2008, all patients (n = 314) referred to a tertiary care physical medicine and rehabilitation facility in France were consecutively screened. A total of 185 hospitalized for non-specific cLBP were prospectively assessed. Forty patients fulfilling inclusion criteria were consecutively enrolled and included in 2 groups according to MRI findings: Modic I (n = 15) and non-Modic I (n = 25). MRI findings were assessed independently by 2 spine specialists and a radiologist. HLA-B27 status was determined. Data were collected on clinical measurements and fulfillment of Amor criteria (AC) and modified New York criteria (mNYC). All assessors were blinded to HLA-B27 status.

Results. Whatever the Modic group, no patient fulfilled AC or mNYC, and mean total scores were comparable [3 ± 2 (range 0–22; p = 0.977), 1 ± 1 (range 0–3; p = 1.000), and 0 ± 0 (range 0–1; p = 1.000) for AC and clinical and radiological mNYC, respectively]. HLA-B27 status was similar in both groups [n = 2 (13%) vs n = 0 (0%); p = 0.135].

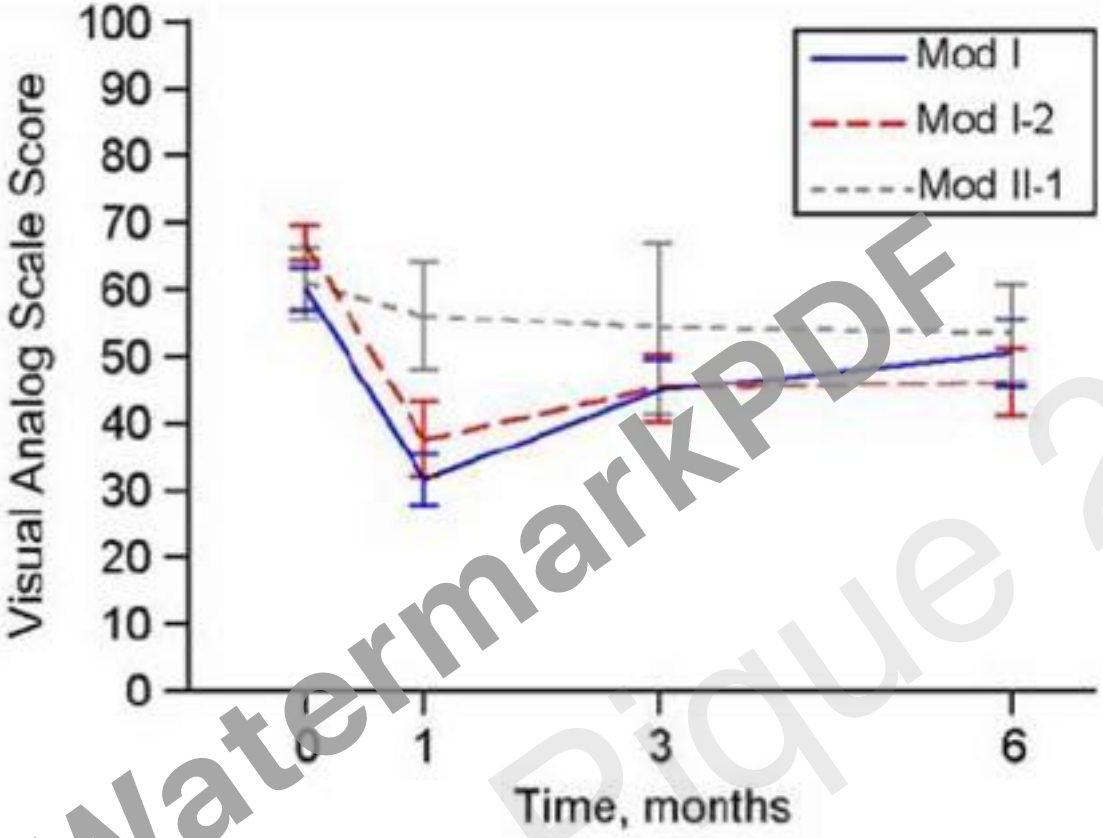
Conclusion. Patients with cLBP and Modic I vertebral endplate signal changes on lumbar MRI do not fulfill widely used and validated criteria for SpA and/or AS. Such cases are clinically distinct from SpA and AS. (J Rheumatol First Release August 15 2010; doi:10.3899/jrheum.100165)

Eur Spine J
DOI 10.1007/s00586-006-0301-y

ORIGINAL ARTICLE

Relation of inflammatory modic changes to intradiscal steroid injection outcome in chronic low back pain

Fouad Fayad · Marie-Martine Lefevre-Colau · François Rannou · Nathaly Quintero · Alain Nys · Yann Macé · Serge Poiraudeau · Jean Luc Drapé · Michel Revel



Sample Size					
	Mod I	37	33	31	27
	Mod I-2	25	25	21	19
	Mod II-1	12	11	8	10

Fig. 2 Mean ± SE development of low back pain intensity in the three groups. *Mod I* Modic I changes, *Mod I-2* Modic I-2 changes, and *Mod II-1*, Modic II-1 changes

ARTHRITIS & RHEUMATISM
Vol. 63, No. 9, September 2011, pp 2828–2831
DOI 10.1002/art.30443

CASE REPORT

Association of Accelerated Switch From Vertebral End-Plate Modic I to Modic 0 Signal Changes With Clinical Benefit of Intradiscal Corticosteroid Injection for Chronic Low Back Pain

Modic I vertebral end-plate signal changes detected by magnetic resonance imaging (MRI) are associated with chronic low back pain. Typically, Modic I signal changes in untreated patients switch to non–Modic I signal changes within 3 years, which reflect spontaneous healing. Recent findings suggest that Modic I signal changes may be related to local inflammatory changes, providing a rationale for treatment with intradiscal injections of antiinflammatory drugs. In the present report, we describe a 31-year-old man with 1-year history of chronic low back pain associated with vertebral end-plate Modic I signal changes, who received 1 intradiscal corticosteroid injection in L5–S1. Local treatment led to rapid pain relief and was associated with an accelerated switch from Modic I to Modic 0 signal changes, as seen on lumbar MRI at 1-month followup. This is the first report of an effective local treatment for both the symptoms and the structural changes of chronic low back pain that are associated with Modic I signal changes. Additionally, this case reinforces the hypothesis that local inflammation has a pathogenic role.

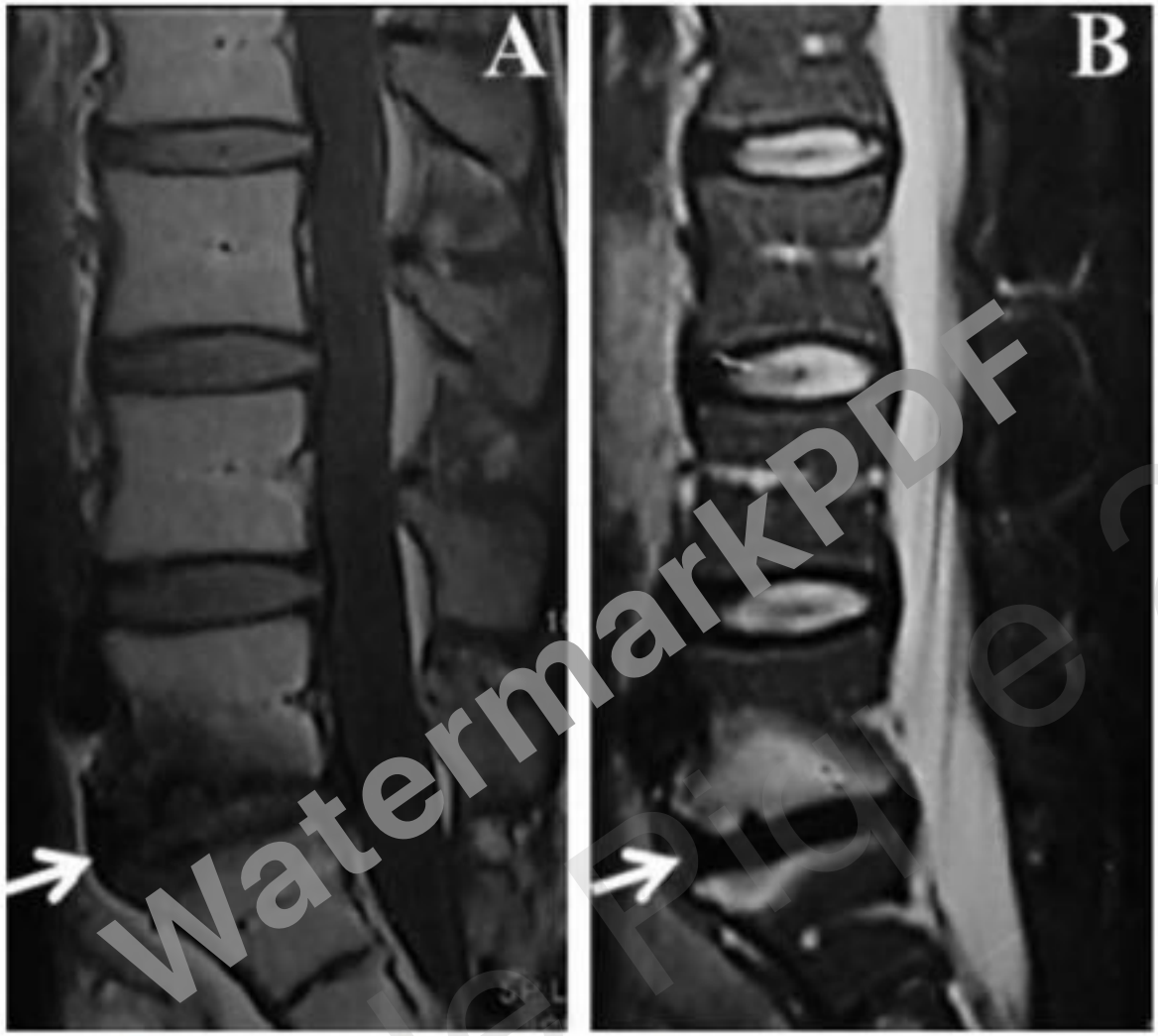


Figure 1. Magnetic resonance imaging of the lumbar spine performed prior to intradiscal corticosteroid injection, showing typical features of vertebral end-plate Modic I signal changes at the L5–S1 level (**arrows**). Hypointense and hyperintense signal changes are visualized in T1-weighted (**A**) and STIR-weighted (**B**) sequences, with edema involving the adjacent vertebral end-plates and bone marrow.

Figure 2. Magnetic resonance imaging of the lumbar spine performed at 1-month followup, showing an early switch from vertebral end-plate Modic I to Modic 0 signal changes (**arrows**), with complete regression of vertebral end-plate and bone marrow edema, as visualized on T1-weighted (**A**) and STIR-weighted (**B**) sequences.

Résultats

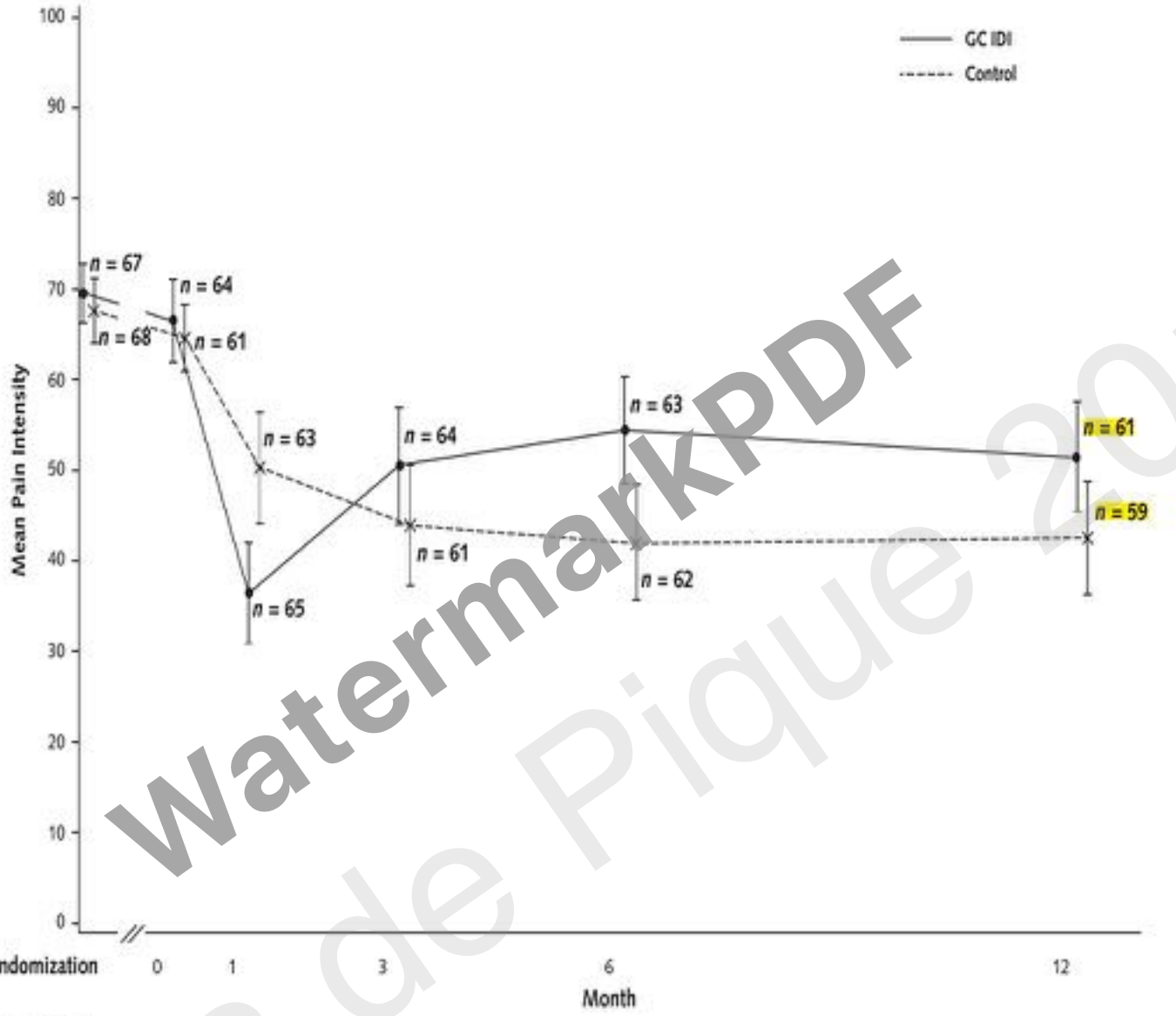
Annals of Internal Medicine ORIGINAL RESEARCH

Intradiscal Glucocorticoid Injection for Patients With Chronic Low Back Pain Associated With Active Discopathy

A Randomized Trial

Christelle Nguyen, MD, PhD; Isabelle Boutron, MD, PhD; Gabriel Baron, PhD; Katherine Sanchez, MD; Clémence Palazzo, MD, PhD; Raphaël Benchimol, MD; Guillaume Paris, MD; Étienne James-Belin, MD; Marie-Martine Lefèvre-Colau, MD, PhD; Johann Beaudreuil, MD, PhD; Jean-Denis Laredo, MD, PhD; Anne Béra-Louville, MD; Anne Cotten, MD, PhD; Jean-Luc Drapé, MD, PhD; Antoine Feydy, MD, PhD; Philippe Ravaud, MD, PhD; François Rannou, MD, PhD*; and Serge Poiraudeau, MD, PhD*

Nguyen C et al. Ann Intern Med. 2017 Apr 18;166(8):547-556



Mean Pain Intensity (95% CI)						
GC IDI	69.6 (66.3–72.9)	66.6 (62.0–71.1)	36.5 (31.0–42.1)	50.5 (44.1–56.9)	54.4 (48.5–60.4)	51.5 (45.4–57.5)
Control	67.6 (64.2–71.1)	64.6 (60.9–68.3)	50.3 (44.2–56.4)	43.9 (37.4–50.5)	42.0 (35.7–48.4)	42.5 (36.3–48.8)

Traitements futurs: anti-inflammatoire et non pas régénératif!

Regenerative therapy of intervertebral disc: a double blind phase 2b trial of intradiscal injection of allogenic mesenchymal stromal cells in degenerative disc disease unresponsive to conventional therapy

Fondation ARTHRITIS Network Program

Propositions de prise en charge

Explication claire et précise: information du patient sur sa pathologie, sur la lésion et son évolution

- **AINS le soir au coucher + corset + antalgiques**
- **Cure courte de corticoïdes après évaluation de la balance bénéfice/risque avec le patient**
- **Infiltration épidurale**
- **En milieu spécialisé : infiltration intradiscale (25 mg hydrocortisone)**
- **Chirurgie : arthrodèse**

Osteoporos Int (2012) 23 (Suppl 8):S857–S860
DOI 10.1007/s00198-012-2164-x

BONE QUALITY SEMINARS: SUBCHONDRAL BONE

Vertebral subchondral bone

C. Nguyen · S. Poiraudeau · F. Rannou

Review

From Modic 1 vertebral-endplate subchondral bone signal changes detected by MRI to the concept of 'active discopathy'

Christelle Nguyen,[1,2] Serge Poiraudeau,[1,3] François Rannou[1,2]

Spine

RMD Open
Rheumatic & Musculoskeletal Diseases

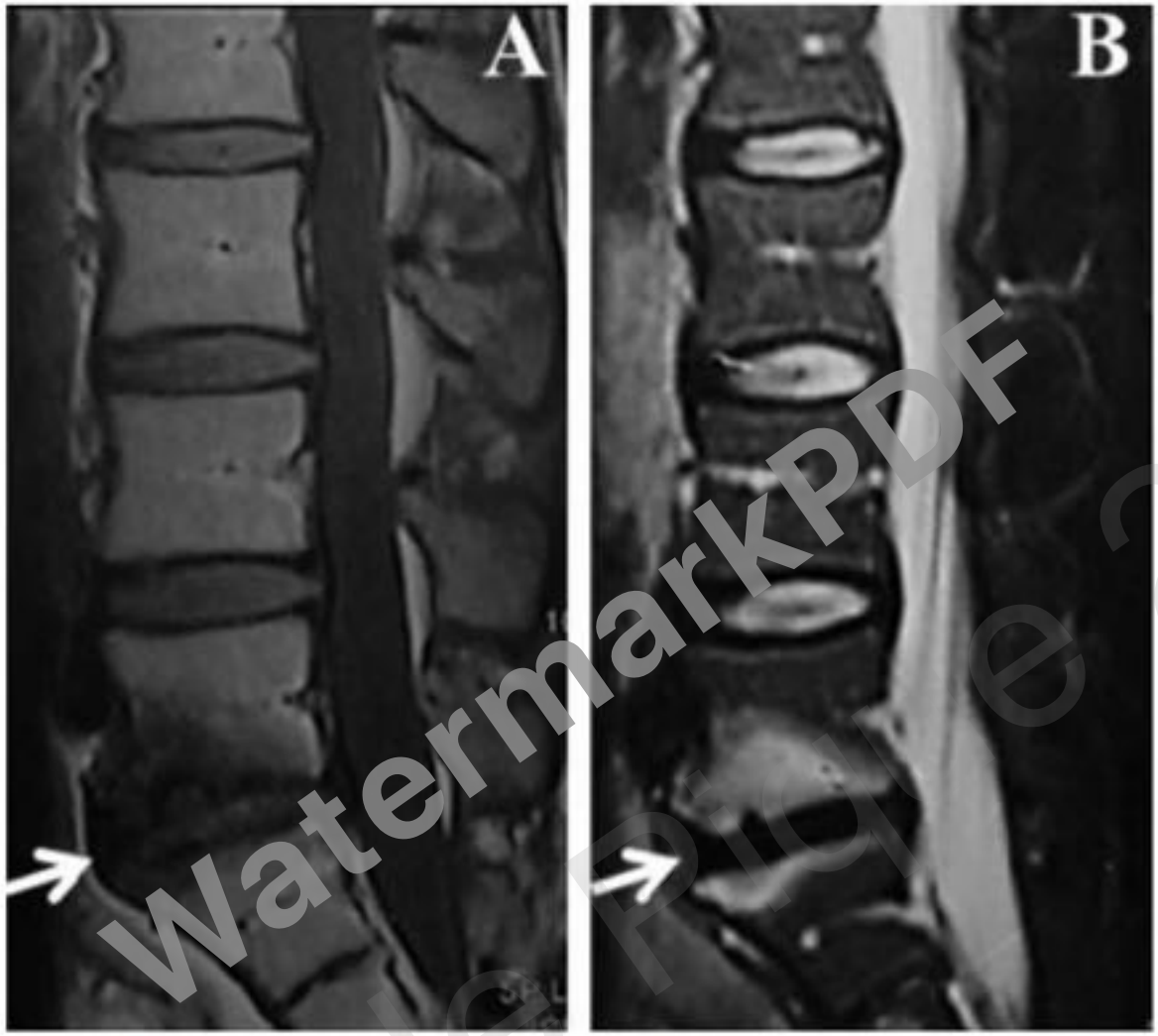
REVIEW

Active discopathy: a clinical reality

Margaux Boisson,[1] Marie-Martine Lefèvre-Colau,[1,2,3,4] François Rannou,[1,2,5] Christelle Nguyen[1,2,5]

Propositions de prise en charge : médecine de précision

- **La discopathie active sur rachis non opéré**
  - **Modic I généralisée au DIV : maladie inflammatoire locale**
  - Modic I asymétrique (cause ou conséquence d'un trouble statique) : maladie mécanique
- La discopathie sur rachis opéré



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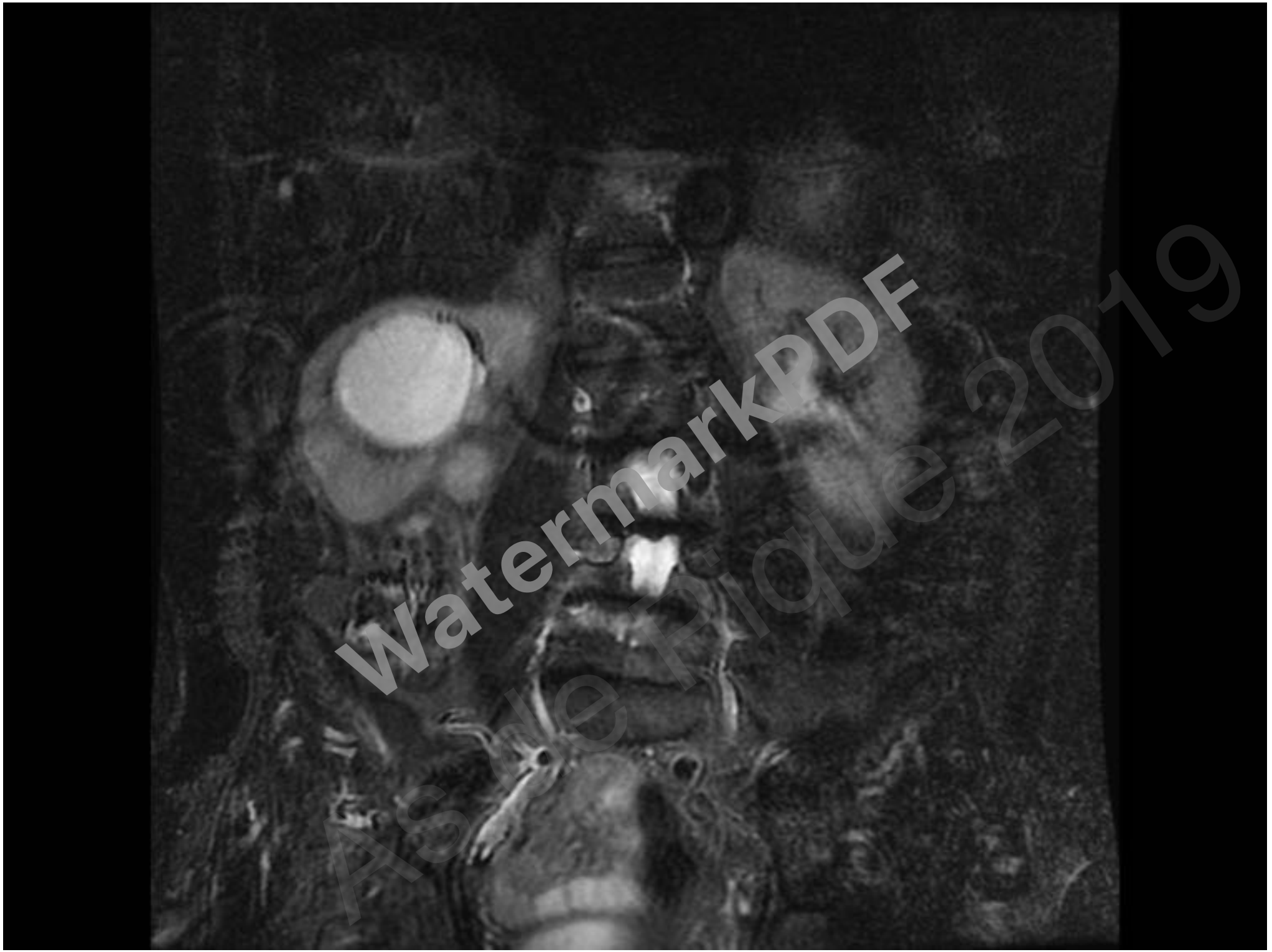

Modic mécanique par instabilité

Pr A Feydy, Cochin

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- La discopathie sur rachis opéré

Modic postopératoire

Pr A Feydy, Cochin

Propositions de prise en charge

- **La discopathie active sur rachis non opéré**
  - **Modic I généralisée au DIV : maladie inflammatoire locale**

  Traitement biologique antiinflammatoire
  - **Modic I asymétrique (cause ou conséquence d'un trouble statique) : maladie mécanique**

  Traitement biologique anti-inflammatoire et traitement mécanique (corset, chirurgie)

- **La discopathie sur rachis opéré**

  Traitement biologique anti-inflammatoire et traitement mécanique (corset, chirurgie)

La discopathie active serait une maladie infectieuse?

Signification du signal Modic I ?

Ce signal IRM : hypo T1 et hyper T2 (Modic I) n'est 1) ***Rarement observé chez les sujets asymptomatiques***
2) Présent chez 5 à 20% des lombalgiques Chroniques
3) Facteur prédictif de bonne réponse à la chirurgie : pas de sur risque d'infection post-op! (argument contre)

Vital et al , *Spine* 2003; Weishaupt et al, *Radiology* 1998

Argument pour

Arthritis & Rheumatism (Arthritis Care & Research)
Vol. 57, No. 7, October 15, 2007, pp 1311–1315
DOI 10.1002/art.22985

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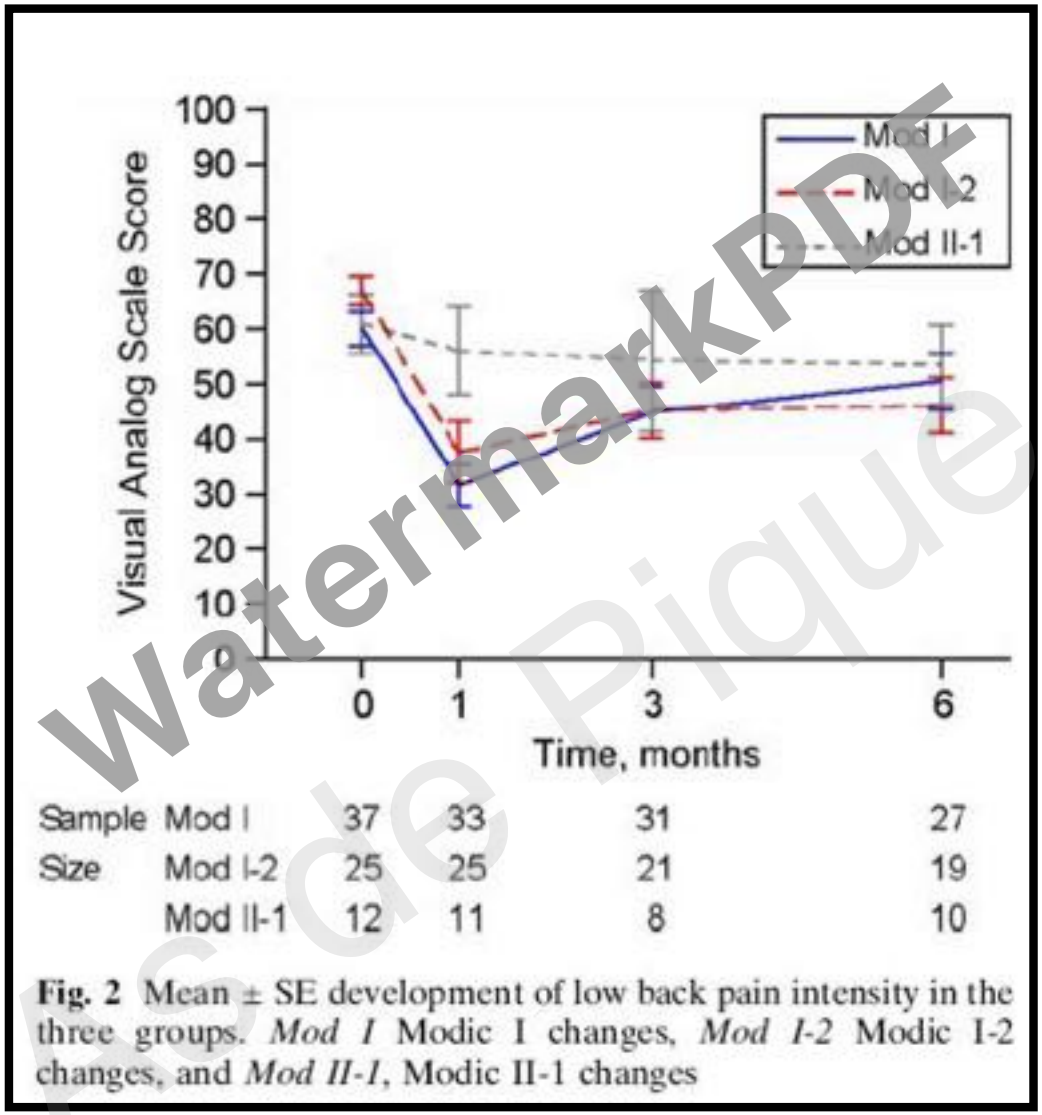
Argument contre



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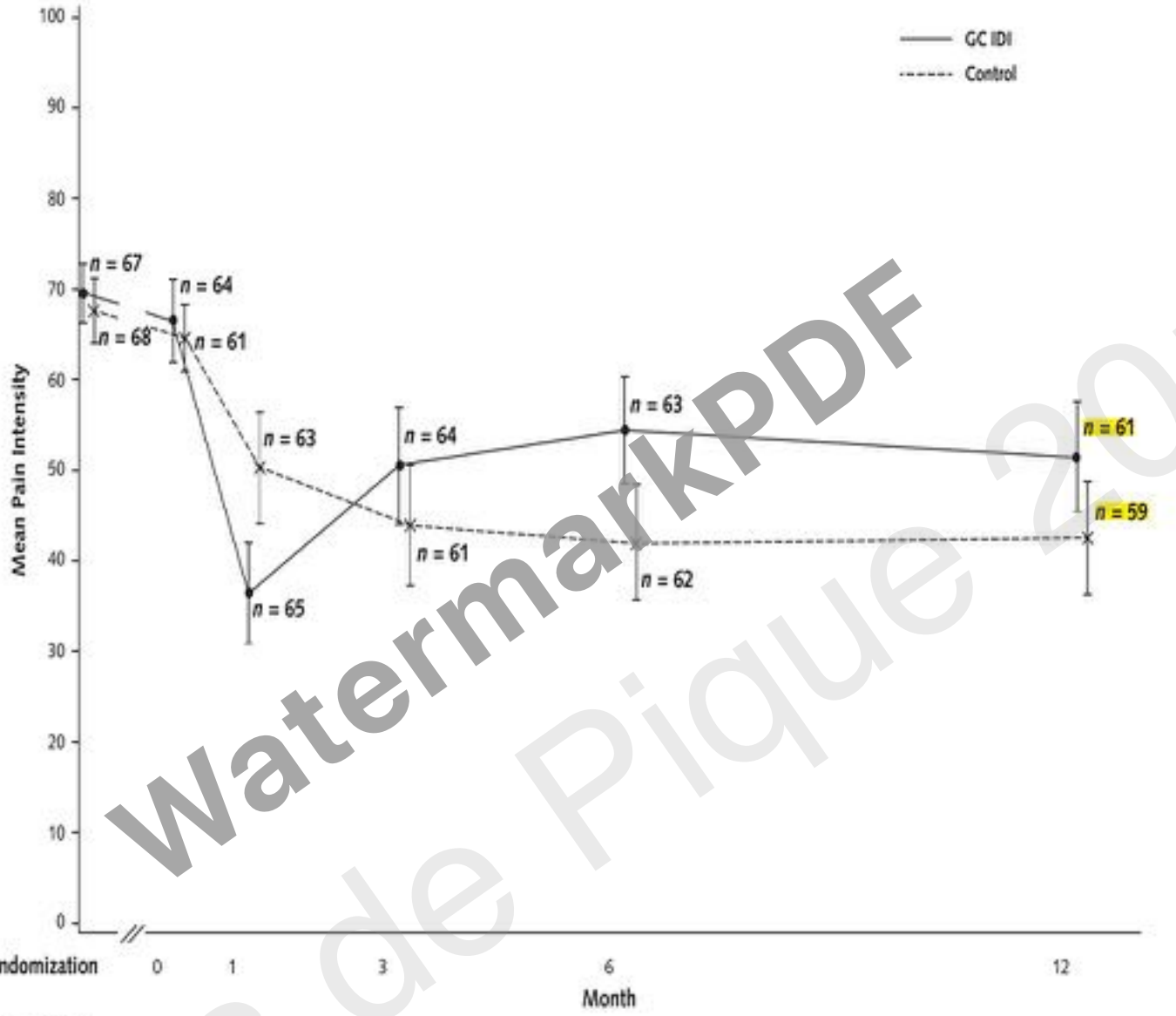
Fayad et al , Eur Spine J



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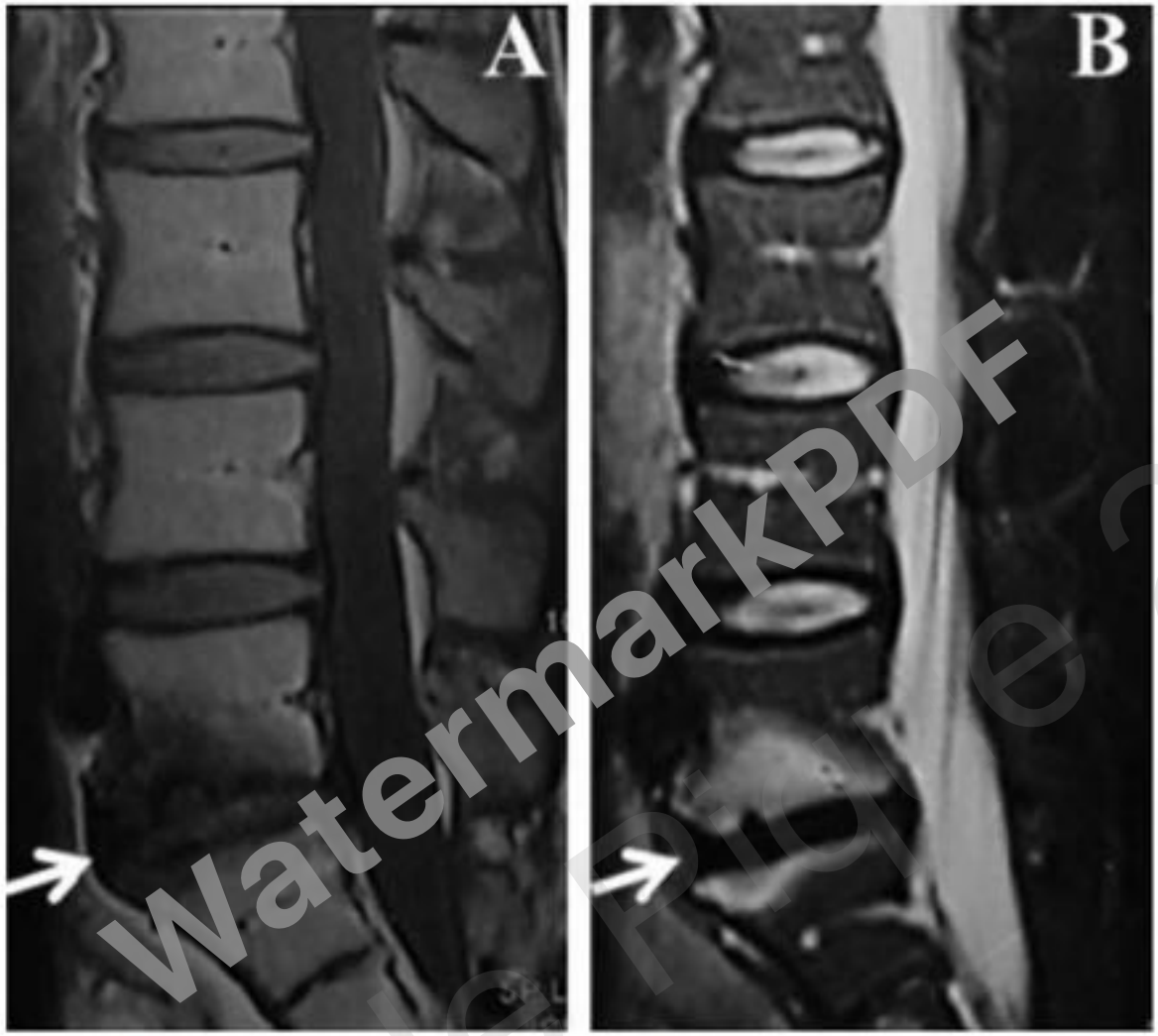

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Rannou et al , Arthritis Rheum

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Argument pour

Eur Spine J (2013) 22:697–707
DOI 10.1007/s00586-013-2675-y

ORIGINAL ARTICLE

Antibiotic treatment in patients with chronic low back pain and vertebral bone edema (Modic type 1 changes): a double-blind randomized clinical controlled trial of efficacy

Hanne B. Albert · Joan S. Sorensen · Berit Schiott Christensen · Claus Manniche

Eur Spine J (2013) 22:690–696
DOI 10.1007/s00586-013-2674-z

ORIGINAL ARTICLE

Does nuclear tissue infected with bacteria following disc herniations lead to Modic changes in the adjacent vertebrae?

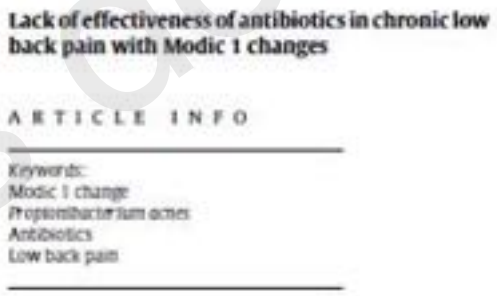
Hanne B. Albert · Peter Lambert · Jess Rollason · Joan Solgaard Sorensen · Tony Worthington · Mogens Bach Pedersen · Hanne Schack Nørgaard · Ann Vernallis · Frederik Busch · Claus Manniche · Tom Elliott

Argumentations

- 2 études indépendantes l'une de l'autre
- Antécédent de chirurgie discale chez 50% des patients, pas d'analyse des deux sous groupes
- Pas d'amélioration franche de l'imagerie
- Amélioration au bout de 6 à 7 semaines alors que ce n'est pas un critère d'évaluation
- Aucune amélioration du groupe contrôle
- Conflit d'intérêt

Conclusion

- La seule explication logique est que ca n'était pas une étude en double aveugle notamment l'évaluation
- Essai sur une trentaine de patients dans le service: aucune réponse +
- Pas d'étude bactério dans l'étude clinique en fait!


Lack of effectiveness of antibiotics in chronic low back pain with Modic 1 changes

ARTICLE INFO

Keywords:
Modic 1 change
Propionibacterium acnes
Antibiotics
Low back pain

Modicklinikken

Do you suffer from back pain? Have you tried a variety of treatments without success?

If so, it is possible that you have a condition relating to Modic changes in your vertebrae. The pain this causes cannot be successfully treated using traditional therapies.

The Modic Clinic provides effective treatments for this condition, based on the latest research. Our detailed understanding of your symptoms means that you will be heard and understood. You can feel confident knowing we base out treatment on the world's leading research organisation within this field.

Approximately 6% of the population suffer from back pain caused by Modic changes. As this specific back pain condition can't be detected via spinal X-rays, many cases remain undiagnosed. However it only takes an MRI scan to identify the presence of Modic changes in your spine.

Suffering pain in the areas highlighted in the diagram above, along with pain that possibly radiates into one or both legs can indicate the presence of Modic changes within your vertebrae.

Take our test here

Modic changes are pathological changes to the structure and function of the vertebrae. They include micro-fractures and fibrous growth within the spinal tissue. These occur predominantly in the lower back and the neck.

Recent research has shown that Modic changes can be successfully treated with a combination of specific antibiotics and supplemented with a technique known as bio-stimulation laser..