

ORIGINAL ARTICLE

Are Modic changes in patients with chronic low back pain indicative of a worse clinical course? 10 years of follow-up[☆]



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KEYWORDS

Modic changes;
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Abstract

Objective: Establish the long-term (10 years) predictive value of Modic changes in the course of lumbar pain and the need for surgical treatment.

Material and method: Observational longitudinal prospective cohort study. Comparison of progression at 10 years of 2 groups of patients with chronic lumbar pain: group A with Modic changes in MRI and group B with no Modic changes. Exclusion criteria: neoplasia, inflammatory or infectious diseases, or previous surgery. Assessment was done with the aid of the VAS for low lumbar and radicular pain and the Oswestry Disability Questionnaire. The need for surgical or medical treatment and occupational disability during the study period was analysed. For the statistical analyses, the Mann–Whitney *U* test and logistic regression were applied.

Results: Seventy patients, 24 male and 46 female, with a mean age of 56.5 years (35 in each group) were included in the study. No statistically significant differences in the intensity of lumbar pain, degree of impairment, or need for medical or surgical treatment ($p > .05$) were found in patients with Modic changes types 1, 2, or 3 between the baseline assessment and 10 years after. No statistically significant differences between patients with/without changes in Modic at 10 years of follow-up ($p > .05$) were determined.

Conclusions: There is no relationship between Modic changes in MRI and greater intensity of lumbar pain or need for medical or surgical treatment at 10 years of follow-up. Modic changes cannot be considered a sign of bad prognosis by themselves, or an indication for surgery.

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PALABRAS CLAVE

Cambios Modic;
Resonancia
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Lumbar;
Dolor

¿Supone la presencia de cambios Modic en pacientes con dolor lumbar crónico una peor evolución clínica y una mayor posibilidad de precisar cirugía? Evolución a 10 años

Resumen

Objetivo: Valor de los cambios Modic a 10 años en la evolución del dolor lumbar y requerimiento quirúrgico.

Material y método: Estudio observacional longitudinal de cohortes prospectivo. Se compara la evolución a los 10 años de 2 grupos de pacientes con dolor lumbar crónico: el grupo A mostraba cambios Modic en la RM y el grupo B no tenía cambios Modic. Criterios de exclusión: neoplasia, enfermedad inflamatoria o infecciosa y cirugía previa. Fueron valorados mediante EVA para dolor lumbar, radicular y cuestionario de discapacidad de Oswestry. Se estudia la necesidad de tratamiento quirúrgico o médico y la obtención de una incapacidad laboral en el periodo de estudio. El análisis estadístico fue realizado mediante U de Mann-Whitney y regresión logística.

Resultados: Se incluyeron 70 pacientes, 24 varones y 46 mujeres, con una edad media de 56,5 años (35 en cada grupo). No se encontraron diferencias estadísticamente significativas en los pacientes con cambios Modic 1, 2 o 3 entre la valoración inicial y la realizada 10 años después en la intensidad del dolor lumbar, el grado de discapacidad o la necesidad de tratamiento médico o quirúrgico ($p > 0,05$). No se observan diferencias estadísticamente significativas entre los pacientes con cambios Modic y sin ellos a 10 años de seguimiento ($p > 0,05$).

Conclusión: La presencia de cambios Modic en la RM no se relaciona con una mayor intensidad del dolor, de la discapacidad por dolor lumbar o la necesidad de tratamiento médico o quirúrgico a 10 años de seguimiento. Los cambios Modic no pueden ser considerados un signo de mal pronóstico por sí solos, ni una indicación para cirugía.

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Introduction

Low back pain is a symptom leading to a high number of consultations in primary care and trauma surgeries, as a medical problem of the highest order from its rate of incidence on the general population. Low back pain presents with multifactorial aetiology with disc degeneration being one of its main causes. The use of additional tests such as magnetic resonance (MRI) for the study of lumbar involvement has revealed the possible causes of pain in this region. One of the findings assessed in MRI as a probable cause of low back pain are Modic changes.¹ These changes are signal changes in the vertebral body which may extend up to the vertebral end plate and are differentiated into 3 types by the author depending on their appearance in sequences T1 or T2 of MRI. The prevalence of Modic type changes in the general population is around 6%, and is most commonly located at levels L4-L5, although L5-S1² is the most common level for people aged between 60 and 65.

There is controversy in the literature regarding the association between the presence of Modic changes in a person and low back pain.^{3,4} Several studies have demonstrated the existence of an association between the presence of Modic changes and low back pain.⁵ However, the studies assessed have some limitations, such as the diversity of population studied and the lack of follow-up time of these patients.

The aim of our study is to: establish the clinical value of the Modic type signal changes in the MRI and its association as the cause of low back pain, with a follow-up of 10 years.

Material and methods

A longitudinal analytical study of prospective cohorts was designed.

In March 2007 90 patients who had suffered from low back pain of over 6-month duration and for whom an MRI had been requested, were assessed. The intensity of the low back pain and leg pain was assessed using the visual analogue scale (VAS) and the Oswestry disability questionnaire validated into Spanish. Following completion of these data and physical examination, medical treatment was administered based on analgesics and anti-inflammatory drugs aimed at relieving their low back pain symptoms. Furthermore, they were advised to lose weight and to exercise to increase abdominal and spinal musculature. Since the patients did not present with improvement in their symptoms of low back pain after 6 months of applied treatment, a lumbar MRI was performed with protocolised examination using sagittal, coronal and axial slices, with enhanced sequences in T1 and T2 (Fig. 1A), which was performed with a mean wait of 3 months since request.

For analysis of the images and their classification into presence or absence of Modic type signal changes a single-blind technique was used. The images were analysed by an orthopaedic surgeon expert in spinal surgery and by a neuro-radiologist. The correlation between the findings by one or the other was calculated by the kappa interobserver reproducibility coefficient. The finding was classified as presence or absence of Modic signal changes. The patients with

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