

Vertebral endplate signal changes (VESC) in the adult population: Prevalence of VESC, its natural course, association with low back pain, and the prediction of new VESC

Abstract in English

Vertebral endplate signal changes (VESC) have been reported to be common among patients with low back pain (LBP) and to be associated with the presence of LBP. However, there is a need for more detailed knowledge about VESC.

The aim of this work was to obtain a deeper understanding of the clinical relevance of VESC in the adult population, particularly: 1) the prevalence of VESC, 2) the natural course of VESC, 3) the association between VESC and LBP, and 4) the predictors of the development of new VESC.

A systematic review of the current literature was conducted. In addition, longitudinal data were used from a population-based cohort study of 344 people from the Danish general population who had an MRI scan and completed questionnaires at the age of 40 and again at age 44. VESC and disc-related MRI findings were evaluated using standardized evaluation protocols. Variables on gender, height and weight, smoking, LBP within the past year and month, number of days with LBP, consequences of LBP, work load, and level of leisure activity were taken from the questionnaires.

The results from the literature review and the cohort study confirm that VESC is a common MRI finding among adults and is more common in patients with LBP than in people who do not seek care for LBP. In the cohort study, the natural course of VESC was dependent upon the size of VESC. Those which did not extend beyond the vertebral endplate were more likely to be transient over time, as compared with those which extended more into the vertebral body. In the present literature, VESC has been associated with LBP in study samples from the general, working, and clinical populations. However, results from this cohort study revealed that the association between VESC and LBP can disappear over time. The predisposing factors for the development of new VESC were found to be related to the discovertebral complex rather than extrinsic factors, such as smoking or physical load.

Our conclusions were that VESC are common in the adult population and may be clinically relevant in some patients with LBP. However, the clinical relevance of the various stages of VESC for people at different stages in life requires further clarification.