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Summary

Role of diagnostic imaging in the diagnostics and monitoring of treatment results in children with juvenile idiopathic arthritis

Introduction

Juvenile idiopathic arthritis (JIA) is the most commonly diagnosed systemic autoimmune connective tissue disease in children. As it stands,JIA presents a diagnostic challenge from a clinical point of view, particularly during the early stages of the disease. This stems from two overlapping factors – the heterogeneous course of JIA, and the intensive motor organ development in the child patient. The etiopathogenesis of JIA hasn't been fully determined yet; it's assumed that environmental factors and genetic predisposition can both have an impact on the development of the disease. While data on the prevalence of JIS may be underestimated, it's accepted that in Europe it falls within the range of 3 to 15 cases per 100,000 16-year-olds.

Aim

The aim of this study was to evaluate the usefulness of X-ray imaging (XR), ultrasound imaging (US), and magnetic resonance imaging (MRI) in the diagnostics and monitoring of JIA.

Materials and methods

Enrolled into the study were JIA patients aged 2-18 years, diagnosed in accordance with the 2001 ILAR classification criteria. The patients' medical records were analyzed for JIA. Depending on clinical needs, the patients also had XR, US or MRI scans done.

Results

In total, 184 (115F/69M) patients were enrolled into the study. The mean patient age was 9.7 ± 4.5 years, and mean disease duration was 2.9 ± 3.2 years. An XR scan was performed in 184 (100%) patients. Changes characteristic of JIA were found in 39 (21%) patients, most often visible swelling of periarticular tissue – 18 (10%) patients, and periarticular arthritis – 14 (8%) patients. A US scan was performed in 176 (96%) patients. The most common changes were synovial membrane effusions and thickening, found in 172 (93%) and 136 (74%) patients, respectively. An MRI scan was performed in 17 (9%) patients. Changes characteristic of JIA were found in all patients.

Conclusions

Diagnostic imaging plays an important role in both the diagnostics and monitoring of JIA. XR imaging may be used to detect late changes. Thanks to its ubiquitousness, sensitivity and specificity,

US imaging can serve as the basic form of examination in the diagnostics and monitoring of JIA. Conversely, due to its limited availability and high cost, MRI should be used primarily in cases of diagnostic or therapeutic doubt.

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