INPLASY PROTOCOL

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Characteristics, Treatment, and Research Development of Bertolotti's Syndrome: A Bibliometric Analysis and Systematic Review

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Review question / Objective: Bertolotti's syndrome is a prevalent congenital deformity. However, many physicians fail to include it in their differential diagnosis for low back pain, which results in missed diagnosis or misdiagnosis. There is still a lack of standardized treatment and management strategies for Bertolotti's syndrome. This study aimed to review the clinical characteristics and management of Bertolotti's syndrome and reports bibliometric insights in advancements in Bertolotti's syndrome research.

Information sources: A thorough literature search of the PubMed, Embase, Medline, Scopus, and Cochrane Library databases was then conducted to identify relevant studies that were published until September 30, 2022.

INTRODUCTION

Review question / Objective: Bertolotti's syndrome is a prevalent congenital deformity. However, many physicians fail to include it in their differential diagnosis for low back pain, which results in missed diagnosis or misdiagnosis. There is still a lack of standardized treatment and management strategies for Bertolotti's

syndrome. This study aimed to review the clinical characteristics and management of Bertolotti's syndrome and reports bibliometric insights in advancements in Bertolotti's syndrome research.

Condition being studied: Patients with chronic pain or functional impairment secondary to lumbosacral transitional vertebrae (LSTV) are diagnosed with Bertolotti's syndrome, one of the most common congenital deformities of the lumbosacral vertebrae. It was firstly reported by Mario Bertolotti's in 1917. The shape of the sacral lumbar vertebrae is varied, from hypertrophy of the transverse process to complete fusion of the transverse process andsacrum. However, the mechanism by which LBP and other symptoms secondary to LSTV occur remain unclear. The LSTV may change the biomechanical properties of the lumbosacral region, resulting in abnormal movement and asymmetric stress distribution in the lumbosacral region. The enlarged transverse process could cause intervertebral foramen stenosis and subsequent nerve compression.
It is necessary to summarize the diagnosis and therapy for Bertolotti's syndrome, which is a prevalent but neglected disease. In the current study, we conducted a comprehensive systematic review to investigate the clinical characteristics (symptoms, pathological type, and epidemiological information) and therapeutic measures of all Bertolotti's syndrome cases reported in the existing literature. Hopefully, this study could aid clinicians in the assessment and diagnosis of Bertolotti's syndrome and provide a reference for the selection of appropriate treatment strategies.

METHODS

Participant or population: Not applicable.

Intervention: Not applicable.

Comparator: Not applicable.

Study designs to be included: The studies included case reports, clinical trials, case series, basic researches, animal testing, reviews, cadaveric studies, and imaging studies.

Eligibility criteria: Not applicable.

Information sources: A thorough literature search of the PubMed, Embase, Medline, Scopus, and Cochrane Library databases was then conducted to identify relevant studies that were published until September 30, 2022.

Main outcome(s): Three reviewers independently extracted the corresponding data from each article, including the year of publication, publication country, keywords, number of cases, and patients' demographic data (e.g., sex, age, and Castellvi types). Moreover, we described patients' symptoms, symptom durations, comorbid diseases, and received treatments (e.g., operative or non-operative treatments).

Additional outcome(s): Three reviewers independently assessed the quality and risk of bias of the selected studies based on the methodological index of non-randomized studies (MINORS).the quality and risk of bias of the selected studies.

Quality assessment / Risk of bias analysis: Categorical data were presented as frequencies and percentages and numerical data as means, ranges, and standard deviations. Furthermore, annual trends of publications, distribution, citation, co-authorship status, research hotspots, and co-citation status were quantitatively and qualitatively analyzed. VOS viewer and the Citespace software were used for visual analysis, data mining, mapping, and clustering of the retrieved articles, clearly and visually presenting the structural patterns of published studies as graphs.

Strategy of data synthesis: We used a broad search terminology, including "Bertolotti's syndrome" OR "lumbosacral transitional vertebra" OR "far-out syndrome," without filtering. A thorough literature search of the PubMed, Embase, Medline, Scopus, and Cochrane Library

databases was then conducted to identify relevant studies that were published until September 30, 2022.

Subgroup analysis: Not applicable.

Sensitivity analysis: Not applicable.

Country(ies) involved: China.

Keywords: Bertolotti's syndrome, characteristics, research development, bibliometric analysis, systematic review.

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