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Mechanisms of Intervertebral Disk Degeneration/Injury and Pain: A Review

Abstract

Degeneration of the intervertebral disk and its treatments are currently intensely investigated topics. Back pain is a condition whose chronic and debilitating nature combined with its prevalence make it a major health issue of substantial socioeconomic importance. Although researchers, and even sometimes clinicians, focus on the degenerated disk as the problem, to most patients, pain is the factor that limits their function and impacts their well-being. The purpose of this review is to delineate the changes associated with disk degeneration and to outline mechanisms by which they could be the source of back pain. Although the healthy disk is only innervated in the external layer of its annulus fibrosus, adjacent structures are plentiful with nociceptive receptors. Stimulation of such structures as a consequence of processes initiated by disk degeneration is explored. The concept of discogenic pain and possible mechanisms such as neoinnervation and solute transport are discussed. Finally, how such pain mechanisms may relate to current and proposed treatment strategies is discussed.

椎間盤退變/傷害和疼痛的機制：回顧

椎間盤退變及其治療是目前激烈的研究主題。背痛是慢性和衰弱性結合其流行性使它成為社會經濟重要性中一個主要的健康問題。儘管研究人員，有時甚至醫生，專注於退化椎間盤的問題，對於大多數患者，疼痛是限制了他們功能和影響他們健康的因素。這篇回顧的目的是描述與椎間盤退變相關的變化，並列出他們可能是背痛的來源機制。雖然健康的椎間盤只有神經分佈於環狀纖維的外層，相鄰結構是佈滿痛覺受體。源自椎間盤退變而引發起一連串刺激到相關結構的後果經過探討。椎間盤源性疼痛及有可能的機制如新的神經支配和溶質運移的概念均進行了討論。最後，這種疼痛機制如何關係到現有和擬議的治療策略都進行了討論。