Format: Abstract

Int Orthop. 2016 Jan;40(1):135-40. doi: 10.1007/s00264-015-2886-4. Epub 2015 Jul 10.

Treatment of discogenic back pain with autologous bone marrow concentrate injection with minimum two year follow-up.

Pettine K[1], Suzuki R[2], Sand T[2], Murphy M[3,4].

Author information

Abstract

PURPOSE: The purpose of this study is to assess safety and feasibility of intradiscal bone marrow concentrate (BMC) injections to treat discogenic pain as an alternative to surgery.

METHODS: A total of 26 patients (11 male, 15 female, aged 18-61 years, 13 single level, 13 two level) that met inclusion criteria of chronic (> 6 months) discogenic low back pain, degenerative disc pathology assessed by magnetic resonance imaging (MRI) with modified Pfirrmann grade of IV-VII at one or two levels, candidate for surgical intervention (failed conservative treatment and radiologic findings) and a visual analogue scale (VAS) pain score of 40 mm or more at initial visit. Initial Oswestry Disability Index (ODI) and VAS pain score average was 56.5 % and 80.1 mm (0-100), respectively. Adverse event reporting, ODI score, VAS pain score, MRI radiographic changes, progression to surgery and cellular analysis of BMC were noted. Retrospective cell analysis by flow cytometry and colony forming unit-fibroblast (CFU-F) assays were performed to characterise each patient's BMC and compare with clinical outcomes. The BMC was injected into the nucleus pulposus of the symptomatic disc(s) under fluoroscopic guidance. Patients were evaluated clinically prior to treatment and at three, six, 12 and 24 months and radiographically prior to treatment and at 12 months.

RESULTS: There were no complications from the percutaneous bone marrow aspiration or disc injection. Of 26 patients, 24 (92 %) avoided surgery through 12 months, while 21 (81 %) avoided surgery through two years. Of the 21 surviving patients, the average ODI and VAS scores were reduced to 19.9 and 27.0 at three months and sustained to 18.3 and 22.9 at 24 months, respectively ($p \leq 0.001$). Twenty patients had follow-up MRI at 12 months, of whom eight had improved by at least one Pfirrmann grade, while none of the discs worsened. Total and rate of pain reduction were linked to mesenchymal stem cell concentration through 12 months. Only five of the 26 patients elected to undergo surgical intervention (fusion or artificial disc replacement) by the two year milestone.

CONCLUSIONS: This study provides evidence of safety and feasibility in the non-surgical treatment of discogenic pain with autologous BMC, with durable pain relief (71 % VAS reduction) and ODI improvements (> 64 %) through two years.

KEYWORDS: Bone marrow concentrate; Discogenic pain; Intervertebral disc injection; Mesenchymal stem cells

PMID: 26156727 DOI: 10.1007/s00264-015-2886-4

[Indexed for MEDLINE]

MeSH terms

LinkOut - more resources

PubMed Commons

PubMed Commons home

0 comments

How to join PubMed Commons