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Intradiscal disc injection using bone marrow concentrate and micro fragmented fat. A Comparative Study

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Abstract

Disc degeneration is a common cause of low back pain. This degeneration is multifactorial in origin. Genetic causes seem to play an important role in the development of this pathology. However, environmental factors, such as smoking, also play an important role in this condition. Generally, disc degeneration is associated with reduction of the proteoglycans resulting in disc dehydration, disc height reduction and associated ligamentum flavum thickening, facet hypertrophy and spinal stenosis.

In the past, patients with these conditions not responding to conservative management would need disc fusion or replacement with the possibility of adjacent dic disease. The introduction of regenerative medical techniques over the last few years have permitted avoiding some of these patients aggressive surgical interventions and halting or reversing their degenerative process.

We present here a prospective study of 16 patients who presented with low back pain who were treated by injections of medicinal secretory cells derived from the bone marrow or from the fat. We present the improvement of their visual analogue score their quality of life after the procedure.

Patient and Methods:

In this case series, we present 16 patients who presented with low back pain that failed to improve with conservative measurements. The latter included non-steroidal anti-inflammatory drugs, muscle relaxants, physiotherapy and moderation of activity. Their MRI scans showed variable degrees of lumbar disc degeneration. Disc fusion or replacement was discussed with all these patients. This latter option was either avoided by the patient who feared spinal surgery, refused by their insurance companies, or the patients were medically unfit for disc surgery.

The possibility of intradiscal injection was hence discussed with the patient. It was clearly mentioned to them that this was a novel procedure which according to the present literature carries low risks but no long-term results are available yet. The patient signed the relevant consent forms for the procedures.

Their visual analogue scale low back pain scores were documented before and after the procedure. They also filled in the quality of life questionnaire pre- and post-operatively.

Ten patients had the injection of BMAC, while 6 patients had the injection of micro-fragmented adipose tissue.

Results:

There was an improvement of their VAS, ODI and EQ-5D-3L9UK. Only one of the patients (6%) had surgical fusion of his L4/5 disc.

Discussion: Medicinal secretory cells (previously called Mesenchymal Stem Cells), are having increasing number of applications in medicine. Their regenerative effect has been demonstrated in various animal models and human studies. Their positive applications in degenerative spinal disease has been demonstrated in many studies. In this study we present the use of BMAC and Micro-fragmented adipose tissue. Both series of patients showed improvement with more disc height gain in the adipose tissue group.

Conclusion :

Intradiscal injection of stem cells derived from bone marrow concentrate and micro-fragmented adipose tissue shows improvement of discogenic pain and should be considered as an option before contemplating spinal fusion surgery.

Publications

1. Coalition Building for Health: A Community Garden Pilot Project with Apartment Dwelling Refugees, Jul-Sep 2015;32(3):141-50. doi: 10.1080/07370016.2015.1057072
2. Long term neuropsychological outcome and management of 'decompensated' longstanding overt ventriculomegaly in adults, 26(5):717-21. doi: 10.3109/02688697.2012.673647. Epub 2012 Apr 3.

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