EDITORIAL

Journal of Stem Cell Research and Regenerative Medicine

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

Mohammed Al-Jumaliya
Founder at The Regenerative Clinic Dubai

Introduction : 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.

Background: The social impact of degenerative diseases is steadily increasing, because of the continued rise in the mean age of the active population. Articular cartilage lesions are generally associated with disability and symptoms such as joint pain and reduced function, and remain a challenge for the orthopaedic surgeon. Several non-invasive solution have been proposed, but the results achieved to date are far from being completely satisfactory. Recently, new therapeutic approaches, such as the use of mesenchymal stem cells, have been developed. Among the many sources, the adipose tissue is nowadays considered one of the smartest, due to its abundance and easy access. The aim of this retrospective study is to explore whether patients affected by symptomatic knee osteoarthritis treated with micro-fragmented adipose tissue associated with a chondral shaving procedure experience an improvement in symptoms and function. Osteoarthritis (OA) is a chronic degenerative disease of articular cartilage that is the leading cause of joint disease in the United States. The Centers for Disease Control currently estimates that OA affects over 30 million U.S. adults 1, with an associated treatment cost of $185.5 billion per year 2. Its incidence has doubled in women and tripled in men over the last several decades 3. Knee OA accounts for over 80% of the diseases total burden 4 and affects at least 19% of the U.S. population aged 45 or older 5. Risk factors for OA include age, obesity, trauma, genetics, muscle weakness, prior surgery, and repetitive use among others 6, 7, 8, 9. Age and obesity are consistently correlated with the prevalence of OA, with one epidemiological study reporting that evidence of OA can be found in 44% and 42.6% of males and females over the age of 30, respectively 10. Furthermore, Goulston et al. found that elevated body mass index (BMI) was an independent risk factor for knee pain at baseline and 15 year follow-up 11. Given this information, treatment options for OA will become more coveted as obesity rates continue to rise and as the baby boomer generation, that reached a mean age of 65 years in 2011, continues to age in the United States 12. Orthobiologic injections that include mesenchymal stem cells (MSCs) as effector cells have recently been applied for the treatment of OA. Autologous tissue sources have traditionally been the referred source for orthopedic use, with the most common sources being bone marrow (BM) and adipose tissue (AT) given ease of accessibility. The use of autologous orthobiologic therapies in the treatment of OA has been determined to be safe in a number of different studies , with a large multicenter prospective analysis demonstrating no increased risk of neoplasm The investigation of intra-articular autologous bone marrow aspirate concentrate (BMAC) and microfragmented AT (MFAT) injections for the treatment of OA has increased in recent years, yet there remains a tremendous need for further data and well-conducted trials. Furthermore, there are no published studies that directly compare outcomes between these two autologous tissue sources. Therefore, the purpose of this study is to determine whether autologous BMAC or MFAT injections provide significant pain and functional improvements in patients with symptomatic knee OA and whether outcomes differ between tissue sources. We expect that both treatments will provide significant improvements in pain and function.

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.

Email ID: maljumaily@yahoo.fr