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Aneurysmal bone cyst of the spine: an alternative treatment with mesenchymal stem cells injection

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Introduction: As being a dysplasia rather than a true tumor, spinal primary aneurysmal bone cysts (ABC) are treated more conservatively then in the past. The relative inaccessibility of spinal ABCs forced to find best cost-to-benefit solutions; the current trend is repeated selective arterial embolization (SAE) until healing. Recently, bone marrow derived mononuclear cell injection has been introduced for simple bone with promising results. In this report, we present our preliminary experience in the use of derived mesenchymal stem cells (MSCs) in spinal ABC treatment.

Methods: Two young people aged 15 (a male) and 14 (a female) years old presented with C2 osteolityc large lesion with a radiological diagnosis of ABC, Histologically confirmed. At admission, one was asymptomatic and the girl suffered from neck pain. In one case SAE was not executable due to the origin, from the vertebral artery, of ABC blood supply; the second case resulted refractory to repeated SAE. Both cases presented no significant sign of ossification but high pathological vascularization. Patients were finally submitted to direct intralesional injection of autologous MSCs after iliac crest bone marrow needle aspiration and concentration.

Results: Consecutive clinical and radiological FU was performed. F.U. is 6,5 months in the first case and 2 months in the second; subtotal consolidation with large bone tissue deposit is an obvious healing sign in the first treated ABC; initial ossification and clinical recovery are initial sign of healing in the second case.

Conclusion: Serial SAE proved to be effective in the treatment of ABC. However, it's not purely a safe procedure, it may lead to ischemia of main structures and, aside of the limits of the procedure, a certain percentage of patients result resistant to such process. Recently, MSCs therapy has been introduced to stimulate osteoblastic regeneration with promising results in simple bone cyst and in long bone ABC. Taking advantage of the fact that ABC first cases MSCs injections treated are giving unexpected results, we suggest this procedure as a good alternative for the treatment of such lesions.