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AbstractBook

Methods: After establishing a primary cell line from a biopsy of TC patient with *GALNT3* mutation, we proceeded to the isolation and characterization of TC1-SCs by using several methods (i.e., the evaluation of their differentiation capacity, the expression profiling of embryonic stem cells (ESCs) marker genes, the immunofluorescence staining of the mesenchymal stem cells (MSCs) surface markers, and the study of a single cell to grow into a colony).

Results: The multidifferentiation induction assays revealed the capacity of the isolated TC1-SCs line to differentiate both into adipocytes and chondrocytes. Results obtained from colony-forming unit assay showed a good rate of clonogenic efficiency. We also detected the expression of genes that feature ESCs (i.e., *Oct3/4*, *Nanog*, *Klf4*, and *Sox2*). In addition, we observed the expression of MSC surface markers (i.e., CD44 and CD105). All these results confirmed the presence of a SCs subset into TC lesions.

Conclusion: We have established and characterized for the first time a stem cell line from a primary cell culture obtained directly from the calcified mass of a TC patient carrying a novel *GALNT3* mutation. Nowadays, we are profiling a study of expression of those genes associated with FGF23 pathway and studying the alterations of the mineralization process, which could be related to the novel *GALNT3* mutation. Furthermore, demonstrating the existence of a stem cell subpopulation inside these lesions could aid understanding the cellular and molecular underlying TC progression, to find new molecular diagnostic and therapeutic targets.

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ESTABLISHMENT OF A MANDIBULAR FIBROUS BONE DYSPLASIA IN VITRO MODEL TO STUDY THE ALTERED MINERALIZATION PROCESS AND THE ROLE OF FGF23 IN THIS RARE BONE DISEASE

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Objective: Fibrous bone dysplasia (FBD) is a rare bone disorder characterized in which there is a progressive replacement of bone marrow with fibrous connective tissue. In this study, we have established a primary cell line from a sample of mandibular FBD to evaluate the alteration of the mineralization process, to evaluate the basal levels of FGF23 and the possible correlation between FGF23 expression levels and progression of FBD.

Methods: The human sample of mandibular FBD have been treated with 0.3 mg/mL collagenase to establish a primary FBD cell line. Through gene expression analysis we have evaluated the expression of bone mineralization marker genes (i.e., RANXL, OPG, OCN, etc.) and the expression of ADAMTS2, a marker gene of FBD. In addition to this, we have also performed immunofluorescence assays to evaluate the possible preosteoblastic phenotype of the established cell line. We have also performed an osteogenic differentiation assay to evaluate the alteration of the mineralization process.

Results: We have established a primary FBD cell line, marked as FD-1. FD-1 cell line resulted to be positive for the expression of osteoblastogenesis marker genes and for ADAMTS2 gene, confirming the FBD phenotype. We have also evaluated the expression of CD44 and CD105, which characterized the pre-osteoblasts progenitors. At the moment, the study of assessing the presence of a molecular microenvironment in which FGF23 production could increase is ongoing.

Conclusion: In this study, for the first time, we have described the establishment of a primary cell line of one extremely rare bone disorder, such as FBD. In addition, we have observed as the established FBD line has a pre-osteoblasts phenotype. This represent an important step to study the alterations of the mineralization process and to understand the molecular bases of the high levels of FGF23 which characterized FBD.

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EVALUATION OF LONG-TERM RESULTS OF A MULTICOMPONENT REHABILITATION PROGRAM IN PATIENTS WITH OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS

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Objective: To evaluate the long-term results of a multicomponent rehabilitation program (RP) in patients with osteoarthritis (OA) and rheumatoid arthritis (RA).

Methods: 83 patients with OA and 64 patients with RA with lesions of major joints of the lower extremities were examined. RP (kinesotherapy, low frequency magnetic therapy and biofeedback therapy) was used during 3 weeks at the stage of post-hospital rehabilitation in the 1st group of patients (40 patients with OA and 31 patients with RA). RP was not performed in group II (43 patients with OA and 33 patients with RA). Health-related quality of life (HRQoL) was studied using the Short Form 36-item Health Status Questionnaire (SF-36). The intensity of pain in the involved joints (when walking) was assessed using VAS Huskisson. The $VAS_{0\text{-}100}$ screening scale was used to assess fatigue. We also eval-

uated data on the frequency of inflammatory recurrence and the frequency of nonsteroidal anti-inflammatory drugs (NSAIDs) use over the entire follow-up period.

Results: The groups of patients did not differ much statistically from each other in all studied parameters at the beginning of the study. Rehabilitation results were analyzed after 11-12 months. The combined mean HRQoL score for the physical and mental components of the SF-36 in group I was significantly higher than in group II (p=0.012), with the most noticeable changes in the mental health (p=0.003). The use of RP led to a decrease in the number of painful joints (p=0.038), but not in VAS pain intensity (p=0.08). A reduction in chronic fatigue on VAS_{0-100} was observed in group I only in RA patients (p=0.02). 45.9% of group I patients and 23.7% of group II patients were able to significantly reduce the frequency of taking NSAIDs (p=0.006). Recurrences of the inflammatory process in the affected joints during 11 months of observation in group II were noted in 75% of cases, and in Group I - in 59% (p=0.046).

Conclusion: The combined use of different technologies of non-medicamental influence during medical rehabilitation of patients with joint pathology allows to improve the long-term results of therapy of RA and OA patients.

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INCIDENCE RATE OF AND RISK FACTORS FOR SARCOPENIA IN JAPANESE MEN AND WOMEN: THE RESEARCH ON OSTEOARTHRITIS/ OSTEOPOROSIS AGAINST DISABILITY STUDY 2007–2018

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Objective: To investigate the incidence rate of and risk factors for sarcopenia in Japanese men and women using data from a population-based cohort study entitled the Research on Osteoarthritis/ Osteoporosis Against Disability (ROAD) study.

Methods: From the second survey (2007–2008) of the ROAD study, 1550 participants (522 men and 1028 women; mean age, 65.8 y) were followed up at 3, 7, and 10 y. Skeletal muscle mass, handgrip strength, and gait speed of the participants were assessed. Sarcopenia was defined according to the definition in the Asian Working Group for Sarcopenia 2019 recommendations.

Results: The incidence rates of sarcopenia were 17.8/1000 and 14.5/1000 person-years in men and women, respectively. Additionally, the incidence rates of severe sarcopenia were 6.4/1000 and 4.2/1000 person-years in men and women, respectively. The significant risk factors for the incidence of sarcopenia were age (+1 y, hazard ratio [HR] 1.10, 95%CI 1.09–1.13) and BMI (-1 kg/m^2, HR 1.25, 95%CI 1.19–1.32). The significant risk factors for the incidence of severe sarcopenia were age (+1 y, HR 1.18, 95%CI 1.14–1.22) and BMI (-1 kg/m^2, HR 1.20, 95%CI 1.10–1.32).

Conclusion: The incidence rate of and risk factors for sarcopenia in Japan were clarified.

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FRACTURE LIAISON SERVICE, BONE DOCTOR AND BONE CARE NURSE: A MULTIDISCIPLINARY AND INTEGRATED CARE MODEL FOR PATIENTS WITH FRAGILITY FRACTURE

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The progressive aging of the Italian population and the constant increase in the incidence of osteoporosis lead to an increased risk of fragility fractures, which represent a constantly growing health and economic problem. It is well known that a fractured osteoporotic patient has a higher risk of suffering further fragility fractures. The lack of integrated organizational models for the clinical management of patients with fragility fractures and the prevention of further fractures represents one of the main public health problems in the field of osteoporosis, both reducing the quality of life and life expectancy of patients and representing an extremely high cost for the healthcare systems. In this scenario, it is necessary to develop an interdisciplinary and integrated model to facilitate the care pathway, the management, and the follow-up of the fractured patient, by developing and implementing the fracture liaison service (FLS) model both in public hospitals and private bone clinics.

The FLS is a multidisciplinary care pathway of secondary prevention, aimed to reduce the risk of fracture recurrence in a patient with a previously occurred fragility fracture. FLS includes specialist professional skills, such as endocrinologists, orthopedists,