302

Abaloparatide as a novel therapy for posttraumatic osteoarthritis

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OBJECTIVES/GOALS: Osteoarthritis (OA) is a cartilage destroying disease. We are investigating abaloparatide (ABL) activation of parathyroid hormone receptor type 1 (PTH1R), which is expressed by articular chondrocytes in OA. We propose ABL treatment is chondroprotective in murine PTOA via stimulation of matrix production and inhibition of chondrocyte maturation. METHODS/STUDY POPULATION: 16-week-old C57BL/6 male mice received destabilization of the medial meniscus (DMM) surgery to induce knee PTOA. Beginning 2 weeks post-DMM, 40 μg/kg of ABL (or saline) was administered daily via subcutaneous injection and tissues were harvested after 6 weeks of daily injections and 8 weeks after DMM surgery. Harvested joint tissues were used for histological and molecular assessment of OA using three 5 μm thick sagittal sections from each joint, 50 μm apart, cut from the medial compartment of injured knees. Safranin O/Fast Green tissue staining and immunohistochemistry-based detection of type 10 collagen (Col10) and lubricin (Prg4) was performed using standard methods. Histomorphometric quantification of tibial cartilage area and larger hypertrophic-like cells was performed using the Osteomeasure system. RESULTS/ANTICIPATED RESULTS: Safranin O/Fast Green stained sections showed a decreased cartilage loss in DMM joints from ABL-treated versus saline-treated mice. Histomorphometric analysis of total tibial cartilage area revealed preservation of cartilage tissue on the tibial surface. Immunohistochemical analyses showed that upregulation of Col10 in DMM joints was mitigated in the cartilage of ABL-treated mice, and chondrocyte expression of Prg4 was increased in uncalcified cartilage areas in ABL-treated group. The Prg4 finding suggests a matrix anabolic effect that may counter OA cartilage loss. Quantification of chondrocytes in uncalcified and calcified tibial cartilage areas revealed a reduction in the number of larger hypertrophic-like cells in ABL treated mice, suggesting deceleration of hypertrophic differentiation. DISCUSSION/ SIGNIFICANCE: Cartilage preservation/regeneration therapies would fill a critical unmet need. We demonstrate that an osteoporosis drug targeting PTH1R decelerates PTOA in mice. ABL treatment was associated with preservation of cartilage, decreased Col10, increased Prg4, and decreased number of large hypertrophic-like chondrocytes in the tibial cartilage.

303

Providers Assessment of Nutritional Practices for the Duchenne and Becker Muscular Dystrophy Population

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OBJECTIVES/GOALS: Nutrition plays an imperative role in the management of Duchenne and Becker Muscular Dystrophy, but guidelines for nutrition counseling are absent. This study was designed to gain insight into provider experiences with nutritional services to find solutions for future counseling. METHODS/ STUDY POPULATION: In this prospective, observational exploratory study, semi structured interviews were conducted at Certified Duchenne Care Centers (CDCCs) to gain insight on providers experiences with nutritional services and to identify barriers and solutions to nutrition education/care/counseling at CDCCs. Interviews were video recorded and then transcribed for themes. Overarching themes gave insight for a quantitative survey to be sent out, assessing all members on the multidisciplinary team perceptions, confidence, barriers, and solutions to providing nutritional care to Duchenne and Becker patients. RESULTS/ANTICIPATED RESULTS: We anticipate this study will provide novel data and key information from providers regarding nutrition education /care/counseling efforts in the multidisciplinary care of neuromuscular diseases. DISCUSSION/ SIGNIFICANCE: Results will demonstrate the need for higher standards and more specific recommendations in nutritional services at CDCCs, while providing a framework for referrals, continuing education opportunities, and increasing providers' confidence and abilities to provide sound nutritional advice.

307

Patients expectations of benefits from large-panel genomic tumor testing in rural community oncology practices

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OBJECTIVES/GOALS: Large-panel genomic tumor testing (GTT) is a new technology that promises to make cancer treatment more precise. However, patients may have unrealistic expectations of its benefits. The goal of this project is to assess expectations for GTT among cancer patients in community oncology practices. METHODS/ STUDY POPULATION: A survey assessing expectations of the benefits of GTT was administered to cancer patients participating in a statewide study of GTT implementation, prior to receiving test results. Descriptive and regression analyses were conducted to assess expectations and the factors associated with these expectations. The study sample (N = 1,139) consisted of patients with a range of cancer types (22% gynecologic, 14% lung, 10% colon, 10% breast,and 46% other malignancies). Mean age was 64 years (standard deviation = 11); 668 (59%) were women; 71% had no college degree; 57% came from households with less than $50,000 US dollars household income; and 73% lived in a rural area. RESULTS/ANTICIPATED