FEMALE ATHLETE TRIAD LEADING TO A FEMORAL STRESS FRACTURE IN A DIVISION-I CROSS-COUNTRY RUNNER
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**Background:** A 19 year-old female sophomore Division-I cross-country athlete suffered chronic thigh pain during off-season training. The athlete is 170cm tall and weighs 60.3kg. During the off-season, the athlete was training independently when she began to experience pain in her distal left thigh after workouts. She also noted that over time her post-workout pain had significantly increased. She initially attributed the pain to soreness from workouts, and continued her regimen. The athlete was on a ten-mile run when pain in the distal anteromedial thigh became so intense that she collapsed. She could not immediately bear weight on her leg and had to be transported home. The athlete reports that she iced her thigh for an hour on the night of the incident and reported to a local physician the next morning. The physician elicited a positive fulcrum test, hop test, and a 3-point bending test. The physician also noted palpable tenderness over the medial aspect of the distal femur. Also, at the time of initial evaluation, she admitted to being suffering from bulimia and that she had been amenorrheic the past 5 months before her evaluation. X-Ray images revealed a stress fracture had formed on the medial aspect of the distal neck of the femur. The athlete was instructed to cease running, avoid walking long distances, and avoid prolonged weight bearing on her left leg. The athlete was also referred to a registered dietitian. The athlete reported to her team physician shortly after for a follow-up exam, which yielded the same conclusion. **Differential Diagnosis:** Distal Quadriceps Strain, Vastus Medialis Pathology, Amenorrhea leading to Femoral Stress Fracture **Treatment:** The athlete was instructed not to participate in outdoor pre-season training for cross-country. Instead, she performed pool workouts to maintain her cardiovascular conditioning without placing physical stress on her fracture. She was instructed to begin a rehabilitation protocol after four weeks of rest. Her rehabilitation program was focused on restoring strength in her quadriceps and hamstrings muscle groups, and on regaining proprioception in the knee and lower leg. When she was able to complete her rehabilitation program with no pain, she began a running protocol. She started running half a mile and was allowed to progress by half-mile increments as she could complete her protocol without feeling any pain. After she was able to consistently complete her 3-mile protocol for 2 weeks straight without pain, she was cleared to resume her competitive cross-country training. **Uniqueness:** At the time of the initial evaluation, she had revealed to her physician that she had been frequently participating in purging behaviors after meals. She also revealed that she had been amenorrheic for a span of 5 months prior to her injury. After the diagnosis of her stress fracture, she was instructed to meet with a registered dietitian who spoke to her about the importance of proper nutrition and the female triad. She also started taking birth control to help regulate her menstrual cycle and increase bone density. **Conclusion:** An injury like this is rare in Division-I college athletes. Her eating disorder and amenorrhea were most likely factors that contributed to her low bone density and predisposed her to a femoral stress fracture. These types of injuries need to be treated conservatively, inclusive of nutritional, orthopedic, and possibly psychological treatment. In these situations the athletes also need to be educated on the consequences of improper nutrition and intense training.