INTRODUCTION

Foot and ankle structures bear massive amounts of force during athletic activities and are naturally susceptible to a vast and ever-expanding array of injuries ***(Zoga and Schweitzer 2003).***

The ankle is one of the most frequently injured joints. In order to a better understanding of these lesions, a classification based on the anatomic origin are outlined. The spectrum of injuries has been classified in: (1) osseous lesions, (2) ligamentous injuries, (3) tendinous lesions, (4) miscellaneous injuries ***(Narváez et al. 2003).***

It is easiest to organize the approach to analyzing pathology at the ankle by considering compartmental anatomy. The compartments can simply be divided into the anterior, posterior, lateral, and medial soft tissue compartments. The signal characteristics of the marrow and contour detail of the joints are also described. Last, the sinus tarsi, plantar fascia, and subcutaneous soft tissues should be surveyed ***(Leffler and Disler 2002).***

MR imaging has become the modality of choice in the evaluation of most of these lesions ***(Narváez et al. 2003).***

Magnetic resonance imaging is playing an increasingly important role in evaluation of the injured foot and ankle. Magnetic resonance imaging allows accurate detection of bony abnormalities, such as stress fractures, and soft-tissue abnormalities, including ligament tears, tendon tears, and tendinopathy. The interpreter of magnetic resonance images should

systematically review the images, noting normal structures and accounting for changes in soft-tissue and bony signal ***(Riley 2007).***

Magnetic resonance (MR) imaging with its multiplanar capability and superb soft tissue contrast is quickly becoming the method of choice for evaluating chronic foot and ankle pain and further defining the extent of tendon and ligament injuries ***(Dunfee et al. 2002).***

MR imaging continues to become more widely available with a growing number of systems and shorter scan times, while technologic improvements allow for better anatomic detail and an increased sensitivity for pathology. Often the exact location and nature of an injury is governed by the principle of failure at the weakest point along a musculo-tendo-osseous axis. This point of failure then varies with patient age and physical condition. Adolescents and young adults are most susceptible to bony growth plate or apophyseal injury, whereas tendinous and musculotendinous injuries are more prevalent in the middle aged ***(Zoga and Schweitzer 2003).***

When imaging the foot and ankle after an injury, we employ pathology-sensitive and anatomy-specific MR sequences in multiple imaging planes. In most cases, a pathology-sensitive sequence in the form of a T2-weighted sequence with fat suppression or short tau inversion recovery (STIR) is obtained in different planes and anatomicT1-weighted sequences are performed. It is important for one bone marrow-specific sequence, usually T1 weighted, to be obtained without fat suppression ***(Zoga and Schweitzer 2003).***

Routine ankle MR imaging is performed in the axial, coronal, and sagittal planes parallel to the table top. Marrow abnormalities are best evaluated with fat suppression with short tau inversion recovery (STIR) sequences. Cartilage abnormalities can be visualized with two-dimensional or three-dimensional (3D) gradient-echo sequences. Any pathology would cause local inflammatory response, which in turn cause edema and water retention in the tissue. Thus the area of inflammation or infection would appear dark on T1-weighted images (WI) and very bright on short tau inversion recovery (STIR) images ***(Rosenberg et al.2000).***