Eric T. Ahrens

Title: MRI of CNS Inflammation

Abstract

In vivo imaging of macrophage recruitment to inflammatory sites can help to elucidate the host inflammatory response, can provide significant diagnostic value for a wide range of injury and diseases, and can potentially be used as a surrogate marker to monitor therapeutic interventions. In this talk we will discuss the use of perfluorocarbon (PFC) emulsions for in vivo inflammation detection and quantification. Upon intravenous injection, emulsion droplets enter into the RES and are intrinsically taken up *in situ* predominately by monocytes and macrophages. As these *in situ*-labeled cells participate in inflammatory events in the body, the result is ^{19}F accumulation at inflammatory sites. The *in vivo* ^{19}F MRI signal is inflammation-specific, with no background signal, and can be quantified at inflammatory sites, where the signal is linearly proportional to the macrophage burden**.** *In situ* ^{19}F labeling has been widely used for visualizing inflammation in a large number of preclinical models of CNS injury and disease. We will also discuss the potential clinical applicability of these methods.