



Short Communication

Safety of 9.4 Tesla for Neuroimaging of Healthy and For-Cause Volunteers

Keith R. Thulborn, MD, PhD¹, Ian C. Atkinson, PhD¹, Saad Jamil, BS¹, Neil H. Pliskin, PhD²

Abstract

Purpose: To evaluate the safety of brain MR imaging examinations at 9.4 Tesla (T) as reflected in vital signs and cognitive performance in healthy and medically diagnosed adult volunteers as mandated by the regulatory agency of the Food and Drug Administration.

Materials and Methods: Vital signs were measured on healthy (N=22) and for-cause (N=24) adult volunteers positioned outside (0.3T) and at isocenter (9.4T) of a 9.4 T MR scanner before and after sodium (²³Na) MR imaging. Cognitive performance was evaluated at the Earth's magnetic field before and after imaging. Measurements were compared for statistically significant changes due to exposure to the MR imaging at 9.4 Tesla static magnetic field.

Results: No statistically significant changes in the vital signs or cognitive performance were detected for either the healthy or subjects with medical diagnoses as a result of MR imaging at 9.4 Tesla.

Conclusion: Exposure to the static magnetic field and to MR neuroimaging at 9.4 Tesla do not have any readily demonstrated health risks reflected in alterations of vital signs or cognitive performance of healthy or for-cause adult volunteers.

Keywords

MRI safety, Ultra-high field MRI, Static magnetic field, Vital sign, Cognitive function

Note : This work was partially presented at 3rd World Congress on Radiology and Oncology, April 08-09, 2019 Abu Dhabi, UAE

Author Affiliations

¹Center for Magnetic Resonance Research, University of Illinois at Chicago, USA

²Department of Psychiatry, University of Illinois at Chicago, USA