World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:14, No:07, 2020

Managing the Magnetic Protection of Workers in Magnetic Resonance Imaging

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Abstract : Introduction: In the 'Magnetic Resonance Imaging (MRI)' department, all workers involved in preparing the patient, setting it up, tunnel cleaning, etc. are likely to be exposed to 'ElectroMagnetic fields (EMF)' emitted by the MRI device. Exposure to EMF can cause adverse radio-biological effects to workers. The purpose of this study is to propose an organizational process to manage and control EMF risks. Materials and methods: The study was conducted at seven MRI departments using machines with 1.5 and 3 Tesla magnetic fields. We assessed the exposure of each one by measuring the two electromagnetic fields (static and dynamic) at different distances from the MRI machine both inside and around the examination room. Measurement values were compared with British and American references (those of the UK's 'Medicines and Healthcare Regulatory Agency (MHRA)' and the 'American Radiology Society (ACR)'). Results: Following the results of EMF measurements and their comparison with the recommendations of learned societies, a zoning system that adapts to needs of different MRI services across the country has been proposed. In effect, three risk areas have been identified within the MRI services. This has led to the development of a good practice guide related to the magnetic protection of MRI workers. Conclusion: The guide established by our study is a standard that allows MRI workers to protect themselves against the risk of electromagnetic fields.

Keywords : comparison with international references, measurement of electromagnetic fields, magnetic protection of workers, magnetic resonance imaging
Conference Title : ICBMP 2020 : International Conference on Biophysics and Medical Physics
Conference Location : Stockholm, Sweden
Conference Dates : July 16-17, 2020