One in Ten Million: Fatalities Involving MRI

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Introduction: Approximately 20 million MRI scans are performed annually with only one death being reported in the last 5 years (1). The number of near misses and incidents however has substantially increased despite the introduction of new safety guidelines and standards (2). The increasing frequency of “careless accidents” has been attributed to either operator errors or deviation from safety protocols (3). We sought to determine if this increase in the reported number of accidents has also led to an increase in the number of fatalities in a given year.

Methods: The search strategy utilized queried the five most common internet search engines (google, yahoo, msn, aol, ask jeeves) in order to estimate the number of MRI scans performed annually and the reported number of fatalities involving MRI scans in 2005. Additional sources of information included; medline, journals in radiology and anesthesiology, government databases (FDA,MAUDE), MRI and patient safety web sites.

Results: In 2005, approximately 20 million MRI scans were performed with two reported deaths (4). The first death reported was apparently from a tension pneumothorax due to occlusion of the anesthesia circuit. The second death resulted due to the overdose of an intravenous anesthetic. No other deaths were reported or found.

Discussion: The number of new MRI centers and scans is increasing annually. In addition, more powerful magnets (3T) are being utilized for routine clinical studies (fMRI). We found that despite the increasing frequency of accidents due to a greater number of MRI studies being performed the total number of deaths reported is low. The deaths reported in 2005 however represent more than was found in the literature in the previous five years. The odds of accidentally dying during an MRI appear to be low but the actual number of deaths involving MRI may be underreported. The true indicator of the number of “careless accidents” leading to deaths would be more accurately reflected if institutions are willing to report cases under litigation and unknown to the public. With regards to safety, it seems that the high-risk MRI environment may not resemble high reliability organizations (HRO’s) but may indeed be similar to the maritime industry in its underreporting of loss of life at sea.

References:
1. Anesthesiology 2005;A1300
2. JAMA 2005;294:2145-8
4. apsf.org/newsletter/2005/summer