

COMBINED EFFECTS OF IRON AND GADOLINIUM AS A RISK FACTOR FOR THE DEVELOPMENT OF NEPHROGENIC SYSTEMIC FIBROSIS

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Objective: Nephrogenic systemic fibrosis (NSF) is a systemic disorder occurring in renal disease patients and the etiology may be due to gadolinium exposure. It has been speculated that in hemodialysis patients, iron mobilization (decreased total iron-binding capacity, increased iron level, and transferrin oversaturation) can cause a transmetallation reaction resulting in the release of free gadolinium from its chelator. Deposition of both gadolinium and iron in the affected tissues leads to fibrotic changes that are characteristic of NSF. The objective of this study was to investigate whether the use of gadopentetate dimeglumine leads to iron mobilization and to the development of NSF in hemodialysis patients. Methods: A retrospective chart analysis of 260 hemodialysis patients was done and patients who had undergone a gadolinium containing contrast agent magnetic resonance study were selected for analysis. Serum iron, total iron binding capacity, transferrin saturation, and ferritin levels within thirty days pre and post gadolinium exposure and the type of contrast agent used were analysed. Results: A total of 20 patients were identified as having had a MRI and/or MRA. All of these patients were administered gadopentetate dimeglumine and none had any signs or symptoms suggestive of NSF. The mean follow up time was 21 months. Six patients (24%) had pre and post gadolinium exposure iron studies and the average time of the availability of these results was 18 and 15 days, respectively. There was no statistically significant difference in the serum iron, total iron binding capacity, ferritin, or transferrin saturation pre and post exposure to gadolinium. Conclusion: Our data suggests that the use of gadopentetate dimeglumine in hemodialysis patients does not lead to iron mobilization and therefore may explain the lack of development of NSF in this particular patient population.