Comparison of diagnostic accuracy of MRI with and without contrast in diagnosis of traumatic spinal cord injuries

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Background: Acute spinal cord injury is one of the most common causes of severe disability and mortality after trauma .MRI can identify different levels of spinal cord injury but sometimes unable to detect the associated soft tissue injuries. The role of MRI with contrast in patients with spinal cord injury have not been studied .This is the first study in human to compare the efficacy of magnetic resonance imaging(MRI)with and without contrast in diagnosis and prognosis evaluation of spinal cord injuries.

Method: In this cross sectional-diagnostic study magnetic resonance imaging with and without contrast was performed on 40 patients with acute spinal injury. In these patients three different types of MRI signal patterns were detected and compared.

Results: The most common cases of spinal injuries were accident (72.5%) and the after fall (27.5%). The prevalence of lesions detected includes spine fracture (70%), spinal stenosis (32.5%), soft tissue injuries (30%), Tearing of the spinal cord (2.5%). A classification was developed using three patterns spinal cord injuries. Type I, seen in two (5.0%) of the patients, demonstrated a decreased signal intensity consistent with acute intraspinal hemorrhage. Type II, seen in 8 (20.0%) of the patients, demonstrated a bright signal intensity consistent with acute cord edema. Type III, seen in one (2.5%) of the patients, demonstrated a mixed signal of hypointensity centrally and hyperintensity peripherally consistent with contusion. In the diagnosis of all injuries MRI with contrast efficacy comparable to non-contrast MRI, except in the diagnosis of soft tissue, which was significantly higher sensitivity ($p<0.05$.(

Conclusion: So given that is not significant differences between non-contrast and contrast-enhanced MRI in the diagnosis of major injuries (hematoma, edema, etc.) and contrast-enhanced MRI just better in soft tissues. We recommend to the MRI with contrast only used in cases of suspected severe soft tissue injury which have been ignored by detection MRI without contrast.

Keywords: cord injury| spinal trauma| MRI| contrast