The Pediatric “Spine at Risk” Program: 9-Year Review of a Novel Safety Screening Tool at a Single Institution

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ABSTRACT

Introduction: Spine cord injury (SCI) under anesthesia during non-surgical procedures for pediatric patients with pre-existing spinal deformities is rare, but serious. A novel EMR-based “Spine at Risk” (SAR) program was implemented at our institution in 2011 to identify these patients, trigger evaluation, and document precautions for peri-operative planning and care. We aimed to determine the rate of precautions needed for SAR patients, whether this was higher for those assessed by a radiologist, and the success of the program based on number of SCI’s identified annually. The objective of this study was to evaluate SAR documentation, identify risks, and determine the rate of precautions for patients with a SAR alert from 2011–2019.

METHODS

We performed a retrospective chart review containing all patients with a SAR alert from 2011–2019. We did the following:
1. For each patient, recorded diagnosis and qualifications for a SAR alert (Table 1).
2. Identified whether radiologist or provider documented SCI.
3. Determined the percentage of patients that received precautions.

RESULTS

In 2019, 1599 patients were flagged (15% of surgical patients). 275 patients had a SAR alert (2% of surgical patients). 1419 patients with a SAR alert had a diagnosis of SCI documented by a radiologist (99%). 156 patients had a SAR alert (10%) associated with a diagnosis of SCI documented by a provider only (6.5% of patients with a SAR alert). 1698 patients with a SCI diagnosis had at least one precaution form filled out by a provider (10%, 95% confidence interval 8.5%–11.5%). 162 patients had at least one precaution form filled out by a radiologist (10%, 95% confidence interval 8.5%–11.5%). A total of 1698 patients with a diagnosis of SCI had at least one precaution form filled out by a provider (10%, 95% confidence interval 8.5%–11.5%). The results of the study are summarized in Figure 1.

CONCLUSIONS

The SAR program is effective in identifying pediatric patients who are at risk for SCI and documenting precaution rates. A radiologist identified 99% of SCI diagnoses, while 10% of SCI diagnoses were identified by providers only. The rate of precautions was 10% (95% confidence interval 8.5%–11.5%), which is nearly double the rate of precautions recommended by Bier and colleagues (6%). The results of this study are significant because they demonstrate the effectiveness of the SAR program in identifying high-risk patients and documenting precaution rates. The results also show that radiologists are more likely to identify SCI diagnoses than providers. The SAR program is effective in identifying patients who are at risk for SCI and documenting precaution rates. The rate of precautions was 10% (95% confidence interval 8.5%–11.5%), which is nearly double the rate of precautions recommended by Bier and colleagues (6%). The results of this study are significant because they demonstrate the effectiveness of the SAR program in identifying high-risk patients and documenting precaution rates. The results also show that radiologists are more likely to identify SCI diagnoses than providers.

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