Use of Parkland Trauma Index of Mortality (PTIM) in Operative Orthopaedic Patients: An Initial Report

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Purpose: The extent and timing of surgery in severely injured patients remains an unsolved problem in orthopaedic trauma. Historically different laboratory values or scores have been used to try to predict mortality and estimate physiological reserve. The ISS has been proposed as an estimate of overall trauma load and mortality risk and thus was used to steer decision making regarding damage control orthopaedics. The PTIM has been validated as an electronic medical record (EMR)-integrated algorithm to estimate early trauma-related mortality and has been used at our institution since December 2020 to steer timing for orthopaedic operation in Level I and II trauma patients.

Methods: A retrospective chart review of Level I and II trauma patients admitted to our institution between December 2020 and November 2022 was conducted. Patients scored for PTIM and operated on by the orthopaedic service were included in the study. Patients <18 years old, nonoperatively treated patients, and patients without PTIM scores were excluded. End points were ISS and PTIM, in-hospital mortality, and mention of PTIM by the treatment team in the EMR.

Results: 470 patients (141 female) with a mean age of 43.2 years (range, 18-101, standard deviation [SD] 19.9) were included. Morality was 2.1%. Mean PTIM was 0.19 (0.00-0.89, SD 0.23) and mean ISS was 12.1 (1-59, SD 8.3). PTIM was significantly lower in surviving patients (0.183 vs 0.483, P<0.001). There was no significant difference in ISS between those who lived versus those who died. There was a weak significant correlation between ISS and PTIM (r = 0.352, P<.001). PTIM was mentioned in 11.3% of cases and in 2.6% of cases providers indicated an action in response to the PTIM. PTIM and ISS were significantly higher in patients with documented PTIM. Five patients were not taken to the operating room (OR) due to high PTIM, 7 patients were cleared to go, and in 3 patients it was decided to further monitor PTIM.

Conclusion: ISS was not different between patients who died and survived. It seems unlikely that ISS can be used to make decisions on surgery timing. On the other hand, PTIM was significantly higher in patients that died. PTIM was used to clear patients for the OR more often despite high ISS.