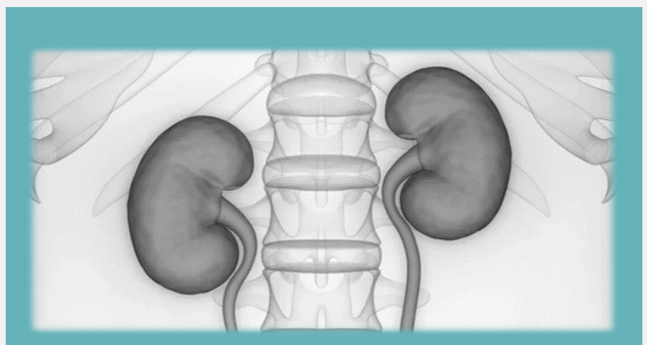

26th Congress - Hospital pharmacists changing roles in a changing world

Ability to assess acute kidney injury in patients admitted to hospital

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Abstract number: 4CPS-150. ATC code: 4. Historical research. KEYWORDS: Acute kidney injury; AKIN-KDIGO-RIFLE; classification.

Background

Acute kidney injury (AKI) is a major iatrogenic concern in inpatients associated to the use of nephrotoxic medications and responsible for chronic kidney disease that will also affect the use of renally eliminated medications. Different criteria were created to identify AKI using serum creatinine (SCr) levels, namely AKIN, KDIGO, RIFLE. An important difference between these guidelines is the identification of early stage AKI by considering the increase in SCr levels at 48 hours as an alert criterion, conversely to the 7 days in KDIGO or RIFLE.

Purpose of Study

To assess the ability to monitor AKI occurrence based on the availability of timely measured SCr levels in a cohort of patients admitted to hospital.

Study Design and Methods

Data from patients admitted to hospital

June 1, 2018 — **December 31, 2020**

COHORT STUDY

EXPOSURE| PATIENTS treated with nephrotoxic drugs → OUTCOME| AKI

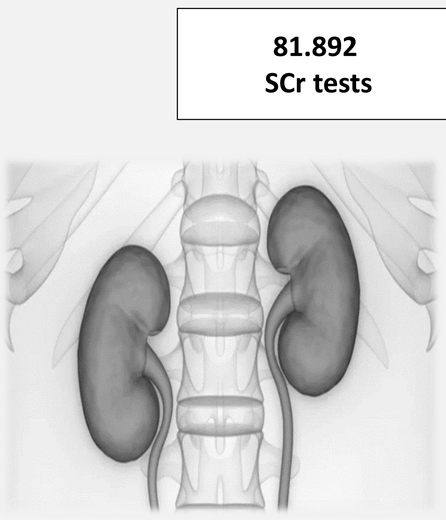
Descriptive analyses of the AKI stage allocation were performed.

AKI stage was **calculated** for each patient based on the AKI **staging cut-offs using** the **three major guidelines** (RIFLE, AKIN, and KDIGO) and their 5 criteria.

- ✓ In a **first analysis**, time to reach the **SCr cut-off** was **ignored.**
- ✓ In a **second analysis**, patients reaching any AKI stage were reevaluated considering the **time recommended between SCr tests**: **48h AKIN, and 7 days RIFLE and KDIGO.**
- ✓ **Excluded patients** with creatinine values above 2 mg/dL on admission.

Results

During 31 months, 25,777 admissions occurred corresponding to 18,935 patients (4,112 patients with more than 1 admission; range 1-18). Mean age of admissions was 60 years (SD=27), 14,146 (54.9%) were female and the mean length of stay was 10 days (SD=16); 63 admissions had duration < 24h. During 263,969 bed-days, 81,892 SCr tests were recorded, representing one test per 3.22 bed-days. While identifying the exposure was simple, identifying the outcome was a major challenge. In 4,407 admissions (17.1%) no SCr test was recorded. The first SCr test was done on average 2.2 days after admission (SD=2.0). A total of 6,958 tests increased 0.3 mg/dL from baseline and 1,500 tests increased 1.5-2 times its value (stage 1); in these, 1,689 and 323 exceeded the 48h and 103 and 29 the 7 day-interval, respectively. In 1,618 tests, baseline increase 2-3 times (stage 2) with 363 over 48h and 33 over 7 day-interval. In 477 tests, baseline increased over 3 times and in 166 increased 4.0 mg/dL (stage 3), where 105 and 39 were over 48h and 10 and 4 over the 7-day interval, respectively.



81.892 SCr tests				
6,958 SCr tests (100%)	1,500 SCr tests (100%)	1618 SCr tests (100%)	166 SCR tests (100%)	477 SCr tests (100%)
1,792 SCr tests (25.8%)	29 SCr tests (2.0%)	33 SCr tests (2.0%)	4 SCr tests (2.4%)	10 SCr tests (2.1%)
5,166 SCr tests (74.2%)	1471 SCr tests (98.0%)	1585 SCr tests (98.0%)	162 SCr tests (97.6%)	467 SCr tests (97.9%)
Increase 0.3 mg/dL 48hrs	SCr changes ≥ 1.5 times baseline 7days	Increase in SCr ≥ 2.0 times baseline	Increase 4 mg/dL baseline	Increase in SCr ≥ 3.0 times baseline
Stage 1		Stage 2	Stage 3	

Potential AKI (10719 SCr tests)

Lost per long test intervals (1868 SCr tests)

Confirmed AKI (8851 SCr tests)

Conclusion

In this study, from the total of 10,719 SCr tests that had values above the cut-offs defined in the AKIN, REFILE and KDIGO guidelines, we identified that 1,868 SCr tests have values that coincide with the existence of AKI, but it was not possible to confirm that they are a actual AKI, as the between-test intervals exceeded the times defined by the guidelines to establish a clear diagnosis.

The absence of sufficient SCr test results, which produced a potentially low AKI identification rate, suggest a potential role of clinical pharmacists, whether ordering SCr tests, or alerting physicians to order SCr tests with between-test intervals lower than 48 hours.

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