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Morbidity and mortality predictors in patients with acute tricyclic antidepressant toxicity

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Background: Tricyclic antidepressant drugs are well known classic medications not only for depression but also for other medical indications like nocturnal enuresis and chronic pain. The severe morbidity and mortality associated with these drugs is well documented due to their cardiovascular and neurological toxicity.

Objectives: The aim of this study is to predict the morbidity and mortality factors in patients with acute TCA toxicity by studying the effect of some risk factors as age, sex, available ingested dose, type of TCA……etc. in relation to outcome toxicity measures (coma grade, ECG findings and duration of hospitalization) and to detect early evidence of cardiotoxicity using quantitative analysis of Troponin I.

Patients & Methods: The present study was conducted on 100 patients presented to the PCC of Ain Shams University hospitals during the period from October 2009 to March 2011 with acute TCA toxicity of both sex and different ages. Patients were divided into 3 groups according to poisoning severity score (PSS) into group I (mild toxicity), group II (moderate toxicity) and group III (severe toxicity). All subjects were examined for: I) sociodemographic data II) medical evaluation III) Investigation parameters: A-Laboratory investigations: Including arterial blood gases, Serum electrolytes (Na and K), random blood sugar and serum troponin I level. B-Electrocardiography (ECG) monitoring: ECG was recorded to all subjects under the present study. In addition to continued monitoring to detect any cardiac arrhythmia during the patients hospital stay. IV) Outcome: include coma grade, ECG findings and duration of hospitalization.

Results: Risk factors (sex, coingestion, time delay and previous attempts) had no effect on difference between groups, while age and mode of toxicity were significantly different (p-value <0.05) between groups. It is found that age has a direct relation with the severity of toxicity, as it was higher in severe group (34.03±15.016 years). Type of TCA ingested had significant effect (p-value <0.05) on both coma grade and endotracheal intubation. Patients with dothiepin toxicity were presented as 72.3% in deep coma (coma grade II, III, IV) constituting 50% of intubated patient, while amitriptyline and clomipramine / nortriptyline were presented as19.6% and 19.2% in deep coma (coma grade II, III, IV) constituting 37.5% and 12.5% of intubated patients respectively. The dose of TCA had a highly significant effect (p-value <0.0001) on severity of toxicity, coma grade and ECG findings. The commonest cause of ICU admission was CVS complications especially severe hypotension, dysrhythmia and conduction block. ADORA criteria (QRS interval >100 msec, cardiac dysrhythmias, altered mental status, seizures, respiratory depression and hypotension) had a high significant effect (p-value <0.0001) on ECG findings, coma grade and type of TCA ingested. The risk factors for intubation in the present study were evident in patients with dothiepin or amitriptyline ingestion, old age, abnormal ECG, deep coma, seizure and two or more ADORA criteria. The most common acid-base disorder in the present study was metabolic acidosis. ECG changes had no relation (P- value >0.05) with all risk factors except for the age and the mode of poisoning. Duration of hospitalization (DOH) had a highly significant (p-value < 0.001) relation with the severity of toxicity in the studied groups, ECG findings and coma grade. Grade of coma had no relation (P-value >0.05) with all risk factors except for the dose of TCA. Level of troponin I was non evident in predicting cardiotoxicity except for occurrence of IHD.

Conclusion: Reed's coma scale is an indicator either for evaluation of poisoning severity in individual TCAs or for assessment of relative toxicity between different types of TCAs. Severity of toxicity in studied groups had a highly significant effect on the duration of hospitalization, ECG findings and coma grade. ECG findings especially QRS duration is an easy, cheap and available diagnostic tool in Emergency Room (ER) to help not only in diagnosing TCA poisoning but also in predicting its severity and occurrence of other complications. No case fatalities recorded in the current study.

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