

A TOXICOLOGICAL STUDY OF PATIENTS WITH ACUTE DIGOXIN POISONING ADMITTED TO THE ALEXANDRIA MAIN UNIVERSITY HOSPITAL

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Introduction:

Digoxin is one of the cardiac drugs that has been used since a very old time. It is used to treat many heart problems, including congestive heart failure, atrial fibrillation or flutter, and some cardiac arrhythmias.

It has mainly a weak positive inotropic effect as it increases myocardial contractility, stroke volume and blood pressure, and a negative chronotropic effect as it reduces heart rate.

The dosage applied is variable according to many personal variations such as renal function, age, body weight, etc. These factors are used to get optimal digoxin levels and decrease the risk of toxicity.

Aim of the work:

This work aimed to study the incidence, clinical features, severity, management, prognostic factors and outcome of patients with acute digoxin poisoning admitted to Alexandria Main University Hospital (Alexandria Poison Center [APC] and ICU) for six months from the 1st November 2019 till the end of April 2020.

Patients and Methods:

This prospective study was conducted on all patients with acute digoxin poisoning, of all ages and of both sexes, who were admitted to Alexandria Main University Hospital for six months duration from the first of November 2019 till the end of April 2020. A detailed history was obtained from the patient. Clinical examination and management were done according to his condition.

Results:

The total number of patients admitted with acute digoxin poisoning during these six months was 39 patients. The age of the patients ranged from one to 47 years with a mean value of 13.03±11.66 years. The highest percentage of the intoxicated patients was in the age group less than 5 years old (n =18) (46.2%) followed by the age group 5-<18 years (n =10) (25.6%). Other age groups represented lower percentages (Table 1).

Various ECG changes were demonstrated in those patients and these changes were variable with time (Table 2). On admission out of 39 patients, 11 patients (28.2%) presented by sagging t wave, 3 patients (7.7%) presented by a first-degree heart block, 4 patients (10.3%) presented by Mobitz I, one patient (2.6 %) presented by Mobitz II, one patient (2.6 %) presented by third-degree heart block and also one patient (2.6 %) presented by left bundle branch block.

After 12 hours from admission (n=34), 18 patients (52.8%) presented with sagging t wave, 8 patients (23.5%) with first-degree heart block, 6 patients (17.6%) with Mobitz I and 4 patients (11.8%) with Mobitz II. After 24 hours from admission (n=27), 8 patients (29.6%), showed sagging t wave, 5 patients showed (18.5%) first-degree heart, and only one patient (3.7%) showed Mobitz I. After 48 hours (n=16) only one patient (6.3%) showed ECG changes in the form of first-degree heart block.

Outcome: 26 patients (66.7%) were admitted to ICU, while 13 patients (33.3%) were treated in Alexandria Poison Center (APC). As regards the duration of admission to ICU, half of the patients (13 patients) stayed for 2 days, 5 patients (19.2%) stayed 3 days, 3 patients stayed 4 days, while the stay of two patients (7.7%) prolonged to 5 days (Figure 1). Nearly all the studied patients, (97.4%, n=38) recovered without complications except only one patient (2.6%) died.

Table (1): Distribution of the studied patients (n = 39) according to demographic data

Demographic data	No.	%
Age (Years)		
<5	18	46.2
5 – 18	10	25.6
18 – 30	8	20.5
>30	3	7.7
Min. – Max.	1.0 – 47.0	
Mean ± SD.	13.03 ± 11.66	
Median (IQR)	15.0 (2.0 – 19.0)	

Table (2): Comparison of ECG changes according to the time elapsed since hospital admission.

ECG changes	On admission (n =39)		12 hours from admission (n =34)		24 hours from admission (n =27)		48 hours from admission (n =16)	
	No.	%	No.	%	No.	%	No.	%
First - degree heart block	3	7.7	8	23.5	5	18.5	1	6.3
Mobitz I	4	10.3	6	17.6	1	3.7	0	0.0
Mobitz II	1	2.6	4	11.8	0	0.0	0	0.0
Third - degree heart block	1	2.6	0	0.0	0	0.0	0	0.0
Sagging t wave	11	28.2	18	52.9	8	29.6	0	0.0
Left bundle branch block	1	2.6	0	0.0	0	0.0	0	0.0

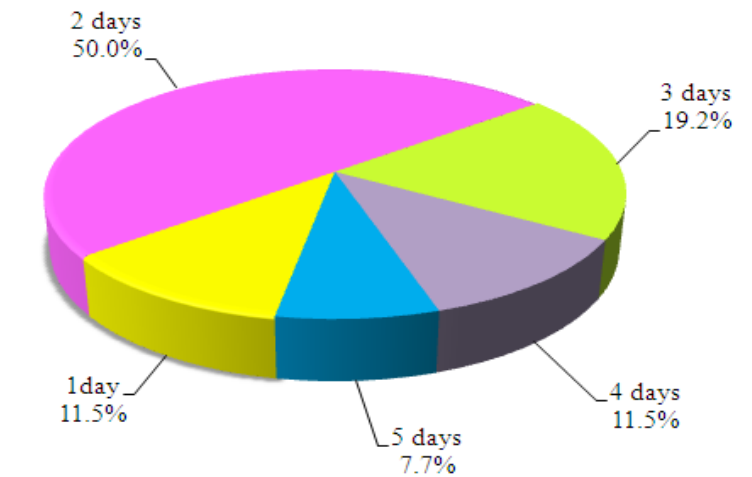


Figure : Distribution of the studied cases according to the duration of ICU stay (n = 26).

Conclusion:

Acute digoxin toxicity continues to be a problem in developing countries because of its wide use and its narrow therapeutic window. In children, it is still an important public health problem and represents a frequent cause of hospital admission resulting from accidental poisoning due to negligence of the family and high activity of the children. This accidental pediatric digoxin poisoning is preventable. Documentation of epidemiological aspects and other variables in childhood poisoning are of great importance for treatment plan and determination of proper preventive measures.

The mortality rate in case of acute digoxin toxicity is low (2.6%) due to the proper management despite the unavailability of the specific antidote (digibind).