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ORIGINAL ARTICLE

Acute Paracetamol Toxicity: A Study of Severity Assessment and Management at Alexandria Poison Control Center

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Abstract

Background: Paracetamol poisoning is a common cause of drug-induced liver injury, especially due to its widespread availability. This study evaluates the frequency, clinical presentation, severity, and treatment outcomes of acute paracetamol toxicity cases at Alexandria Poison Control Center (APC) over six months.
Methods: This prospective study included 75 patients admitted to the APC with acute paracetamol overdose between July and December 2023. Data collected included demographics, exposure history, clinical examination findings, laboratory results, treatment protocols, and outcomes. Poison Severity Score (PSS) was used to assess toxicity severity. Statistical analyses examined associations between clinical and laboratory variables and patient outcomes.
Results: Of the patients, 74.7% were female, and 61.3% were adults. Suicide attempts accounted for 76% of cases. Clinical symptoms were predominantly gastrointestinal, with 48% reporting vomiting and 37.3% experiencing abdominal pain. The majority (72%) of cases were classified as minor toxicity based on PSS, while 8% were moderate, and only 1.3% were severe. Most patients were presented within 24 hours, with a mean hospital stay of 1.27 days. Liver enzyme elevation and INR correlated with prolonged hospital stay and higher PSS scores. All patients received N-acetylcysteine (NAC), with recovery observed in all cases and no fatalities.
Conclusion: Prompt administration of NAC, based on estimated toxic dose, proved effective in managing paracetamol toxicity, with all patients achieving full recovery. The study highlights the need for early intervention and underscores the role of demographic and social factors in overdose patterns. These findings support current treatment protocol and emphasize the need for preventive strategies, especially addressing intentional overdose.

Keywords: Acetaminophen Poisoning, Acetaminophen Toxicity, Acetylcysteine, Liver Injury, Poison Severity Score

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INTRODUCTION

Paracetamol, known as acetaminophen in some regions, is one of the most commonly used over-the-counter medications for pain relief and fever reduction [1, 2]. Its wide availability, affordability, and safety profile contribute to its extensive use across various age groups, including children and pregnant women. However, despite these benefits, paracetamol is also a leading cause of drug-induced liver injury and acute liver failure worldwide [3]. In the United States, it accounts for over half of acute liver failure cases [4], while in Egypt, paracetamol ranks among the most frequent substances involved in poisoning incidents reported by medical facilities such as the Alexandria Poison Control Center and Ain Shams University Hospitals in Egypt, the Poison Control Center [5-7].

Paracetamol toxicity occurs when metabolic pathways become saturated, leading to the accumulation of the toxic metabolite N-acetyl-p-benzoquinone imine (NAPQI), which depletes glutathione and induces oxidative stress, culminating in liver cell damage [8].

Assessment of poisoning severity is critical for guiding treatment strategies and predicting patient outcomes [9]. Various scoring systems are employed to evaluate the extent

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of toxicity, including the Poison Severity Score (PSS), specifically designed for acute poisoning. The PSS assigns scores from 0 to 4, corresponding to no symptoms, mild, moderate, severe symptoms, and death, respectively. This system provides a qualitative measure of clinical impact and serves as a standardized method for comparing poisoning cases [10, 11].

Understanding the factors contributing to the severity of paracetamol poisoning is essential for optimizing treatment and reducing morbidity. This study aims to evaluate the frequency and severity of paracetamol overdose cases at Alexandria Poison Control Center, shedding light on demographic patterns and clinical outcomes associated with acute toxicity.

METHODS

Setting and Sample

The study employed a prospective descriptive design focusing on 75 patients admitted to the Alexandria Poison Control Center (APC) for acute paracetamol overdose from July 1 to December 31, 2023. The inclusion criteria were patients with confirmed isolated paracetamol overdose, while those with an unreliable overdose history or co-ingestion of other substances were excluded.

Data Collection and Analysis

Data collection included a structured interview with each patient to gather personal and clinical history, such as age, gender, time of admission, amount of paracetamol ingested,, circumstances of exposure (e.g., accidental or intentional) and time lapsed from poisoning to seeking medical care. Additional data points included past medical history, previous poisoning incidents, and concurrent medications. Documenting the present complaint and symptoms.

Clinical examination involved assessing vital signs (heart rate, blood pressure, respiratory rate, and temperature), level of consciousness using the Glasgow Coma Scale (GCS), and a comprehensive systemic examination of the chest and abdomen. Pupil size and ECG findings were also recorded to detect any neurological or cardiovascular impacts of the poisoning.

Prior to treatment initiation, comprehensive laboratory investigations were conducted. These included liver function tests (ALT, AST) to evaluate hepatocellular damage and a coagulation profile (INR, PT, PTT) to monitor blood clotting and liver synthesis capacity. Renal function tests (urea, creatinine) and electrolyte levels (sodium, potassium) were assessed to determine kidney function and maintain electrolyte balance. Additionally, random blood sugar (RBS) levels were measured to screen for hypoglycemia or hyperglycemia.

Treatment measures were tailored based on the condition of each patient. Gastric lavage was performed if patients presented within one hour of ingestion to minimize drug absorption. Activated charcoal was administered to further reduce paracetamol absorption. General supportive care included the use of antiemetics, proton pump inhibitors (PPIs), antispasmodics, and intravenous fluids to stabilize the patient. N-acetylcysteine (NAC) was given as a specific antidote for paracetamol toxicity, administered either orally or intravenously. In cases where patients experienced adverse effects such as vomiting from oral NAC, the administration was switched to the intravenous route.

Outcome tracking involved monitoring patients until discharge. The severity of poisoning was assessed using the Poison Severity Score (PSS), and data analysis included statistical correlations between clinical findings, treatment protocols, and patient outcomes using IBM SPSS software version 23. Tests such as the chi-square, Mann-Whitney, and Pearson's correlation were applied to determine statistical significance at a 5% level [12, 13].

Data was collected using a standardized collection form based on international toxicology guidelines. All research personnel were trained in its use, and variable definitions were standardized to enhance data reliability. Discrepancies were resolved by consensus.

Ethical Considerations

Informed consent was obtained from all patients participating in the study or their legal guardians, ensuring their voluntary involvement. The confidentiality of all collected data was rigorously maintained to protect patient privacy and uphold ethical research standards. Additionally, the study received approval from the Ethical Committee of the Faculty of Medicine, Alexandria University (serial number 0107404).

RESULTS

In the present study, 4,114 patients were admitted to the Alexandria Poison Control Center (APC) between July 1, 2023, and December 31, 2023. Among them, 87 patients (2.11%) were admitted with acute paracetamol poisoning. This study focuses on 75 of these patients who met the inclusion criteria, and after applying the exclusion criteria.

I- Socio-demographic data

The study's results showed that out of 75 patients admitted to the Alexandria Poison Control Center for acute paracetamol poisoning, 74.7% were female and males 25.3%, yielding a sex ratio of 2.9:1. Patients' ages ranged from 10 months to 61 years, with a mean age of 19.13 ± 12.55 years. The adult group accounted for the largest proportion of paracetamol intoxication cases (61.3%), followed by children (21.3%), adolescents (16%), and infants (1.3%). Regarding occupation, 33.33% of patients were students, followed closely by employed individuals (30.67%), pediatric cases (22.67%), and smaller proportions of unemployed individuals and housewives (6.67% each). Resident data showed that 84% of patients lived in urban areas, while only 16% were from rural areas.

There was a statistically significant association between sex and age groups (P=0.011), with females being more prevalent in all groups except infants, where males were predominant (Table 1).

II- History of exposure

The data shows that Most poisonings were intentional Suicidal (76%), with accidental cases at 22.7% and a single iatrogenic case (1.3%). Most patients (97.26%) presented within 24 hours of exposure, with delays ranging from 45 minutes to 30 hours (mean 5.96 ± 6.26 hours, median 3.5 hours). Two cases had unknown delays. the amount of paracetamol taken ranged from 1g to 40g (mean 9.44g, median 9.25g). Nearly all cases were oral, with one IV case.

A significant relationship between exposure circumstances and patients' sex (P=0.013), with suicidal exposure being more common among females and accidental exposure more prevalent among males (Table 2). The study also showed a significant age distribution (P<0.001), where accidental exposure was predominant in infants and children, while suicidal exposure was most common in adolescents and adults, especially among adults (Table 3).

Table 4 reveals significant differences in exposure circumstances based on occupational status (MCp <0.001), with suicidal exposure being the most common among all groups except pediatrics, where accidental exposure predominated. Suicidal exposure was highest among students (33.3%) and employed individuals (29.3%) compared to the unemployed (6.7%). There was no significant relation between exposure circumstances and patient residence (MCp = 0.760).

III- Data related to past medical history

The data on past medical history revealed that 82.7% of patients had no significant medical issues, while 17.3% had conditions such as bronchial asthma, cardiac diseases, and psychiatric illnesses. Regarding drug history, 90.7% reported no prior drug use; among those who did, 4% were on antipsychotics, 2.7% on bronchodilators, and others on anti-hypertensive medications and oral hypoglycemic drugs. Additionally, of the 74 patients studied, all but one had no history of previous poisoning; the exception involved a rodenticide poisoning case linked to a suicide attempt.

IV- Data related to clinical presentation

Table 1. Distribution of the studied patients with acute paracetamol poisoning admitted to Alexandria Poison Control Center (APC) according to sex and age (n = 75)

Age (years)	Male (n =19)		Female (n =56)		Total sample (n =75)	
	No.	%	No.	%	No.	%
Infants	1	1.3	0	0.0	1	1.3
Children	7	9.3	9	12.0	16	21.3
Adolescents	0	0.00	12	16.0	12	16.0
Adults	11	14.7	35	46.7	46	61.4
c^2(^{MC}p)	9.791*(0.011*)					
Min. – Max.	0.83-53.0		1.25-61.0		0.83 – 61.0	
Mean ± SD.	17.11±15.45		19.82±11.49		19.13 ± 12.55	
Median	19.0		19.0		19.0	
U (p)	487.50 (0.587)					

χ^2: Chi-square test
MC: Monte Carlo

Table 2. Distribution of the studied patients with acute paracetamol poisoning admitted to Alexandria Poison Control Center (APC) according to sex and circumstances of exposure (n = 75)

Circumstances of exposure	Male (n =19)		Female (n =56)		χ^2	^{MC}p
	No.	%	No.	%		
Accidental	9	47.4%	8	14.3%	8.317*	0.013*
Suicidal	10	52.6%	47	83.9%		
Iatrogenic	0	0.0%	1	1.8%		

χ^2: Chi square test
MC: Monte Carlo
*: Statistically significant at $p \leq 0.05$

Table 3. Distribution of the studied patients with acute paracetamol poisoning admitted to Alexandria Poison Control Center (APC) according to circumstances of exposure and age (n = 75)

Age (years)	Circumstances of exposure: Accidental (n=17)		Suicidal (n=57)		Iatrogenic (n=1)		χ^2	^{MC}p
	No.	%	No.	%	No.	%		
Neonates or newborns an Infants	1	5.9%	0	0.0%	0	0.0%	68.441*	<0.001*
Children	15	88.2%	0	0.0%	1	100.0%		
Adolescents	0	0.0%	12	21.1%	0	0.0%		
Adults	1	5.9%	45	78.9%	0	0.0%		

Table 4. Distribution of the studied patients with acute paracetamol poisoning admitted to Alexandria Poison Control Center (APC) according to circumstances of exposure and occupation (n = 75)

Occupation	Circumstances of exposure: Accidental (n=17)		Suicidal (n=57)		Iatrogenic (n=1)		χ^2	MC_p
	No.	%	No.	%	No.	%		
Employed	1	1.3%	22	29.3%	0	0.0%		
Unemployed	0	0.0%	5	6.7%	0	0.0%		
Pediatrics	16	21.3%	0	0.0%	1	1.3%	65.465*	<0.001*
Students	0	0.0%	25	33.3%	0	0.0%		
Housewife	0	0.0%	5	6.7%	0	0.0%		

χ^2: Chi square test
MC: Monte Carlo
*: Statistically significant at $p \leq 0.05$

78.7% of patients were symptomatic, while 21.3% were asymptomatic. Among symptomatic patients, gastrointestinal symptoms were most common, with vomiting (48%) and abdominal pain (37.3%), while

neurological symptoms included dizziness and drowsiness (18.7%). Cardiovascular symptoms were rare, with only 1.3% experiencing palpitations. Pulmonary symptoms affected 5.3% of patients, including dyspnea (4%) and chest pain (1.3%). Other symptoms included numbness, fever, rhinitis, shivering, and backache, each reported by 1.3% of patients.

V- Data related to clinical examination of the patients

Most of the 75 patients studied presented with stable vital signs, although some abnormalities were noted. Specifically, 62.7% had a normal heart rate, while 37.3% showed tachycardia, with no cases of bradycardia. Blood pressure was normal in 40% of patients, while 38.7% had hypotension and 21.3% were hypertensive. Regarding respiratory rate, 65.3% experienced tachypnea, with 34.7% within the normal range. Most patients (92%) had a normal body temperature, with only 8% presenting with hyperthermia.

All patients had normal levels of consciousness, with a Glasgow Coma Scale (GCS) score of 15, indicating full alertness. They presented with round, regular, and reactive pupils. Electrocardiogram (ECG) findings showed that 66.7% of patients had a normal sinus rhythm, 30.7% had sinus tachycardia, and 2.7% showed sinus bradycardia.

Systemic examination results were generally unremarkable. All patients had clear chest auscultation with bilateral equal air entry, except one with transmitted nasal sounds. Abdominal examination showed a lax, non-tender abdomen in all but one patient, who exhibited mild epigastric tenderness.

VI- Investigations

Liver Enzymes: Most patients had normal liver enzyme levels, with 76% showing normal ALT and 68% normal AST. However, 9.3% had elevated ALT and 22.7% elevated AST. Liver enzyme levels were significantly higher among males (with (P=0.021) for AST and (P=0.020) for ALT) and in cases of intentional suicidal ingestion (P<0.001), with no correlation to the time since exposure or the paracetamol amount taken.

Renal Function: The majority of patients (84%) had normal urea levels, while 16% showed abnormalities, mostly subnormal levels (13.3%). Conversely, 72% had abnormal creatinine levels, primarily subnormal values (70.7%), with only 1.3% showing elevated creatinine.

Electrolytes: Sodium (Na+) levels were normal in 81.3% of patients, with 16% exhibiting hyponatremia and 2.7% hypernatremia. Potassium (K+) levels were normal in 90.7% of cases, while 9.3% had hypokalemia.

Coagulation Profile: Most patients (96%) had normal INR, with only 4% showing elevated values. Similarly, 88% had normal PT, while 8% had below-normal levels, and 4% had prolonged PT. PTT was normal across all patients. INR and PT levels were significantly correlated with the time since ingestion, although there was no correlation with the amount of paracetamol ingested.

Random Blood Sugar (RBS): RBS levels were normal in 96% of patients, with only 4% exhibiting hyperglycemia.

Arterial Blood Gases (ABG): All patients had abnormal ABG results, with 76% showing respiratory alkalosis and 24% showing metabolic acidosis.

The Poison Severity Score (PSS) assessment revealed that the majority of patients (72%) experienced minor poisoning, while 18.7% had no symptoms, 8% had moderate poisoning, and only one patient (1.3%) exhibited severe poisoning.

Severity scores showed significant associations with age and exposure circumstances. Specifically, children were more likely to have no symptoms, while adults experienced minor or moderate poisoning. The single severe case was in an adolescent and associated with suicidal intent. PSS scores also correlated significantly with circumstances of exposure; suicidal cases predominantly presented with minor to severe scores, whereas accidental cases were generally less severe. Gastrointestinal symptoms had a strong association with higher PSS scores, but no significant link was found between PSS and CNS, cardiovascular, or respiratory symptoms (Table 5).

Additionally, there was a strong positive correlation between PSS and elevated liver enzymes (AST P<0.001* /ALT P= 0.0) and INR (P=0.049*), indicating liver impairment in more severe cases. No significant correlation was found between PSS and PT, PTT, time since exposure, or the amount of paracetamol ingested. These findings underscore that poisoning severity was mainly influenced by the patient's age, exposure circumstances, and liver function markers.

VII- Data related to the received treatment

Gastric lavage was done for only (14.7%) of patients; activated charcoal was received by only (22.7%); while (6.7%) received antispasmodic, (2.7%) received liver support. All patients received antiemetic and proton pump inhibitors (PPIs), and IV fluids except one case who received oral fluids. Additionally, all patients received NAC where (52.0%) received it orally, (38.7%) were shifted from oral to iv NAC due to adverse effects of oral NAC in the form of vomiting or diarrhea or both, and (9.3%) received it parenterally from start (iv).

VIII- Duration of hospital stay and outcome

The duration of hospital stay for patients ranged from 0.5 to 11 days, with an average stay of 1.27 days. The route of N-acetylcysteine (NAC) administration significantly affected the length of stay: patients who started with oral NAC and later switched to IV had the longest average stay (2.2 days), followed by those who received IV NAC from the beginning (1.4 days). Patients who received only oral NAC had the shortest stay (0.5 days).

Hospital stay was also positively correlated with liver enzyme levels (ALT p= 0.006* and AST p <0.001*) and coagulation markers (INR p=0.009* and PT=0.013*), with higher levels associated with longer stays. Additionally, patients with higher Poison Severity Scores (PSS) stayed

Table 5. Distribution of the studied patients with acute paracetamol poisoning admitted to Alexandria Poison Control Center (APC) according to PSS with different parameters (n = 75)

Personal data	PSS (severity grades) None (0) (N =14)		Minor (1) (N =54)		Moderate (2) (N =6)		Severe (3) (N =1)		c^2	^{MC}p
	No.	%	No.	%	No.	%	No.	%		
Age (years)										
Infants	0	0.0	1	1.3	0	0.0	0	0.0		
Children	8	10.7	6	8.0	2	2.7	0	0.0		
Adolescents	3	4.0	8	10.7	0	0.0	1	1.3	23.830*	0.001*
Adults	3	4.0	39	52.0	4	5.3	0	0.0		
Sex										
Male	2	2.7	13	17.3	4	5.3	0	0.0	5.870	0.081
Female	12	16.0	41	54.7	2	2.7	1	1.3		
Circumstances of exposure										
Accidental	8	10.7	7	9.3	2	2.7	0	0.0		
Suicidal	6	8.0	46	61.3	4	5.3	1	1.3	15.860*	0.008*
Iatrogenic	0	0.0	1	1.3	0	0.0	0	0.00		
Symptoms (complaint)										
GIT	3	4.0	44	58.7	2	2.7	1	1.	20.707*	<0.001*
CNS	1	1.3	19	25.3	3	4.0	0	0.0	5.917	0.080
CVS	0	0.0	1	1.3	0	0.0	0	0.0	4.034	1.000
Chest	1	1.3	3	4.0	0	0.0	0	0.0	1.848	1.000
Others	0	0.0	4	5.3	0	0.0	0	0.0	2.035	0.717

MC: Monte Carlo
χ^2: Chi square test
*: Statistically significant at $p \leq 0.05$

longer (p <0.001*), indicating that more severe cases required extended hospitalization. However, there was no significant correlation between hospital stay and the time since exposure, amount of paracetamol taken, or other clinical symptoms.

Regarding outcomes, all patients were discharged with complete recovery, experiencing no complications or long-term effects, and there were no fatalities.

DISCUSSION

Paracetamol, a commonly used analgesic and antipyretic, is widely available over-the-counter . Globally, cases of paracetamol poisoning have increased , partly due to self-medication and intentional overdoses, especially during stressful periods like the COVID-19 pandemic [14, 15]. Poison control centers, such as the Alexandria Poison Control Center (APC), serve as crucial resources in tracking and managing poisoning incidents, allowing for better understanding and prevention measures [16]. This study analyzed 75 cases of acute paracetamol poisoning from July to December 2023 at APC, examining demographic, clinical, and treatment-related variables to assess factors influencing severity of poisoning and its outcomes.

The study found a high prevalence of poisoning cases among females (74.7%) and in the adult age group (61.3%). This pattern aligns with findings from studies in Malaysia [17], Chile [18], and Iceland [19], where females generally show higher rates of poisoning, possibly due to a higher prevalence of stress-related symptoms or the use of drug poisoning as a means of seeking help [20, 21]. Additionally, the urban population had a higher incidence of poisoning, which could be attributed to the greater availability of medications and self-medication practices in urban areas [22]. Among occupation groups, students and employed individuals showed higher poisoning rates, potentially due to academic and workplace stress, respectively [23]. The majority (76%) of poisoning cases were associated with suicide attempts, consistent with Noshad et al (2009) [24] in Iran and Gyamlani and Parikh (2002) [25] in New York, indicating that paracetamol's accessibility increases its misuse for self-harm.

Severity was assessed using the Poison Severity Score (PSS), with 72% of cases classified as minor, 8% as moderate, and only 1.3% as severe. This finding is in agreement with Buckley et al (2022) [26] and Çelik et al (2019)[27] who found that the majority of the patients had minor poisoning. The data indicated that severity correlated significantly with age, exposure circumstances, and liver enzyme levels (AST/ALT), with adults and suicidal cases more likely to exhibit higher PSS scores. While gastrointestinal (GI) symptoms, primarily vomiting and abdominal pain, were the most common clinical presentations, neurological symptoms like dizziness and drowsiness were also observed. In severe cases, liver toxicity manifests in elevated transaminases, supporting findings from Zyoud et al (2010)[28] and Popiolek et al (2021) [29]. AST and ALT elevations are often delayed (36+ hours after ingestion) [30], with males and suicidal cases exhibiting higher levels.

Most patients had normal liver enzyme levels on admission (76% for ALT and 68% for AST), but those with elevated enzymes experienced longer hospital stays, reflecting the liver's central role in paracetamol metabolism and its susceptibility to toxicity. Notably, liver function was worse in males and cases with suicidal intent in agreement with Rubin et al (2017) [31] but Gyamlani and Parikh (2002)[25] found that peak aminotransferase level (>1000 IU/L) was more often seen in the accidental overdose group as they present later and sometimes the diagnosis is delayed, which hinders optimal antidotal treatment. The predominance of normal liver enzymes on admission also accords with earlier observations of Hegazy et al (2012)[30] in acetaminophen poisoning, cases in Makkah, Kingdom of Saudi Arabia.

Paracetamol-induced nephrotoxicity was rare; only 2.7% had elevated urea and 1.3% had high creatinine, in line with findings from Zyoud et al (2011) [28]. Renal damage generally occurs later in the poisoning course, as it is often secondary to hepatic injury.

Most patients had normal sodium and potassium levels, though some cases exhibited hyponatremia and hypokalemia, possibly due to stress responses, vomiting, or renal handling changes from hepatic injury. Coagulation profiles showed that most patients had normal INR and PT levels although significant correlations were found between prolonged INR/PT and longer hospital stays. The PSS score also correlated with INR, indicating that liver damage severity affects coagulation, as the liver produces most clotting factors. This finding is consistent with Chidiac et al (2023) [3] who reported that INR level is used to indicate severity.

The median time from exposure to hospital admission was 3.5 hours, with the majority of patients presenting within 24 hours. This early presentation likely contributed to favorable outcomes, as timely administration of the antidote, N-acetylcysteine (NAC), is critical in preventing severe toxicity. Following the toxic dose calculations, NAC was administered to all patients, with 52% receiving it orally and 38.7% initially orally but later switching to IV due to adverse effects like vomiting. Gastric lavage was performed in 14.7% of cases, and activated charcoal was administered in 22.7%, though the efficacy of these interventions remains debated due to paracetamol's rapid absorption [32].

The average hospital stay was 1.27 days, with longer stays associated with IV NAC administration, elevated liver enzymes, and higher PSS scores. Patients who initially received oral NAC and later switched to IV had the longest stays, suggesting that switching due to adverse reactions may prolong recovery. The duration of stay correlated significantly with liver enzyme levels, coagulation parameters, and PSS, emphasizing the impact of hepatic injury on hospitalization length. However, no significant relationship was found between the amount of paracetamol ingested or the time since the exposure and hospital stay.

Zyoud et al (2011) [33] in the study on acetaminophen overdose in Malaysia, had associated the prolonged duration of hospital admission with intentional ingestion, due to large ingested doses and the delay in seeking medical advice.

Remarkably, all patients were discharged with full recovery and no complications or fatalities, underscoring the efficacy of the APC's treatment protocols (figure 1). The study's favorable outcomes align with findings from similar

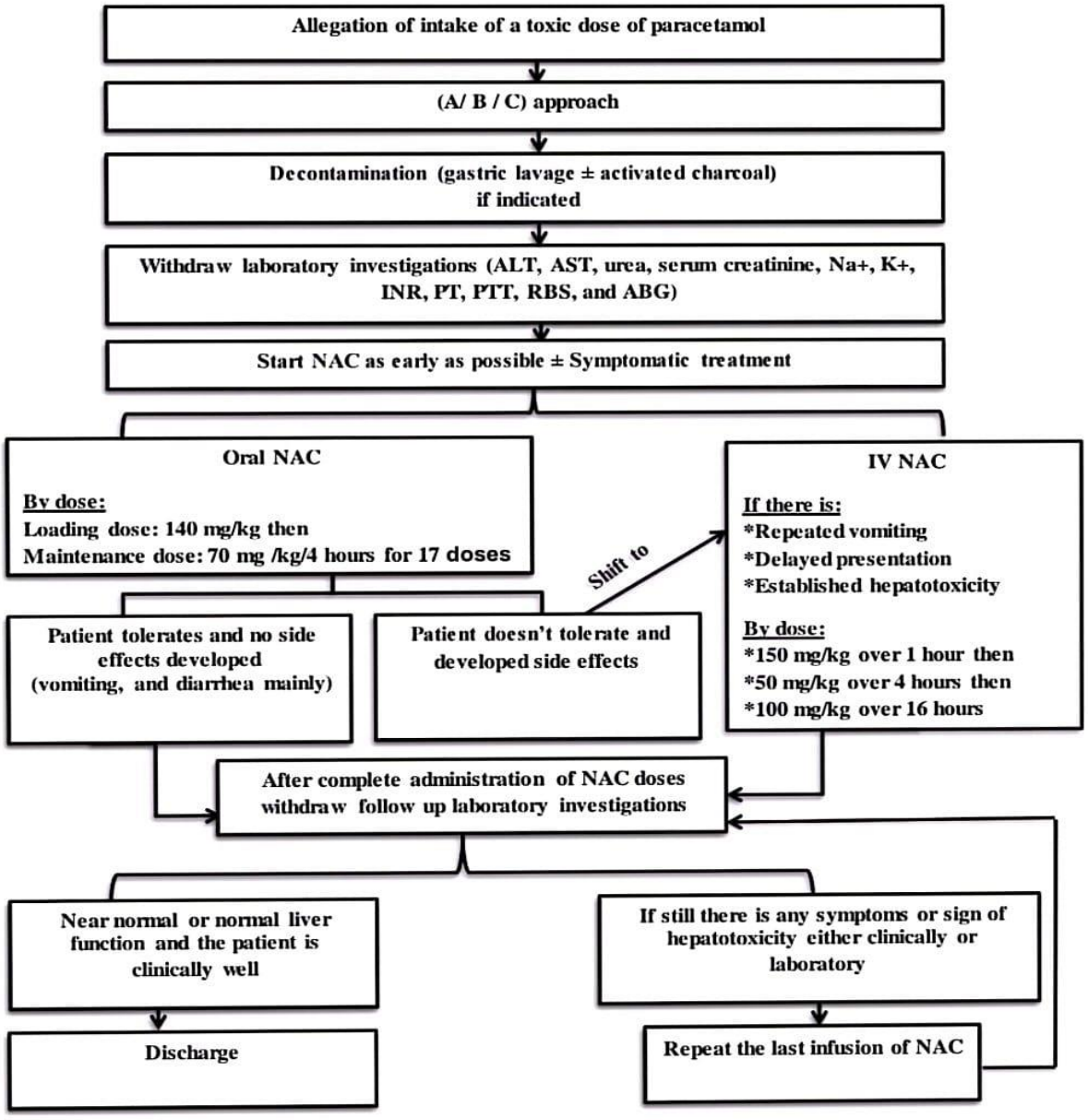

Figure 1. The protocol of management that was used in the treatment of studied cases of acute paracetamol overdose admitted to Alexandria Poison Control Center (APC)

research in Qatar [34], contrasting with higher mortality rates observed in more severe cases in the to the Scottish Liver Transplantation Unit in France [35].

LIMITATION

The study's limitations include the absence of serum paracetamol measurements, reliance on patient-reported data for dose and timing, and its single-center design, which may limit generalizability of the findings. Additionally, lack of post-discharge follow up data prevents assessment of potential long-term outcomes.

CONCLUSION

This study underscores the effectiveness of current management protocols at the APC, particularly highlighting the importance of early intervention NAC administration, in achieving full recovery among paracetamol poisoning cases. It calls for ongoing surveillance and preventive efforts to address the high rate of intentional overdose, with a focus on mental health support and safe medication access. The results contribute valuable data for optimizing treatment protocols in low-resource settings and highlight the need for policies to mitigate paracetamol misuse in at-risk populations.

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