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Managing Crisis In Pediatric Pervasive Developmental Disorder : A Case Study Of Accidental Amitriptyline Ingestion In An 8-Year-Old

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Abstract:
Here the case study examines an 8-year-old female child with K/C/O of pervasive developmental disorder following accidental ingestion of an unknown quantity of amitriptyline presented in st.isabel's hospital , mylapore ,chennai on 11.7.23 . Continuous GCS (Glasgow coma scale) monitoring and serial lab investigations were conducted, revealing electrolyte imbalances . Therefore, she had Amitriptyline poisoning which is a tricyclic antidepressant and on medical management ,starting with a proton pump inhibitor , serotonin 5-HT3 receptor antagonist and along with electrolyte replenisher.

Keywords: *Pervasive developmental disorder , Glasgow coma scale monitoring , Amitriptyline poisoning , Tricyclic antidepressant.*

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I. Introduction

Amitriptyline, a tricyclic antidepressant (TCA), has a well-established place in the treatment of various pediatric conditions, though its use requires careful consideration due to its potent pharmacological profile. Initially developed for depression, its utility has expanded to include chronic pain management, migraine prophylaxis, and in some cases, sleep disorders in children. Amitriptyline's efficacy stems from its ability to inhibit the reuptake of serotonin and norepinephrine, enhancing their mood-elevating effects[1]. However, its anticholinergic properties and potential for cardiac toxicity, especially in overdose, necessitate a cautious approach. [2]

II. Management of Amitriptyline in Pediatric Patients ;

- **Indication and Dosing:** The use of amitriptyline in pediatric patients is typically reserved for specific conditions where alternative treatments have proven ineffective. The dosing must be individualized, starting at a low dose and titrating up slowly while monitoring for efficacy and side effects.[3]
- **Monitoring:** Regular monitoring is essential, particularly at the start of treatment and during dose adjustments. This includes assessing for therapeutic response, side effects, and any signs of worsening mood or suicidal ideation, especially given the black box warning of increased risk of suicidal thinking and behavior in children, adolescents, and young adults taking antidepressants.[3]
- **Side Effects Management:** Common side effects include drowsiness, dry mouth, blurred vision, constipation, and urinary retention. Educating patients and caregivers about these potential side effects and ways to mitigate them is crucial. Severe side effects, such as cardiac arrhythmias, severe hypotension, seizures, or signs of an allergic reaction, require immediate medical attention.[3]
- **Overdose Management:** In cases of suspected overdose, immediate medical intervention is critical due to the risk of life-threatening arrhythmias and central nervous system depression. Treatment involves gastric decontamination with activated charcoal if within a few hours of ingestion, continuous cardiac monitoring, seizure control if necessary, and administration of sodium bicarbonate for cardiac toxicity.[3]
- **Patient and Family Education:** It's vital to educate both the patient and their family about the correct use of amitriptyline, the importance of adherence to prescribed doses, and the need to keep the medication out of reach of children to prevent accidental ingestion.[3]

- **Long-term Management:** Long-term use requires regular follow-up to monitor efficacy, side effects, and the need for ongoing treatment. Adjustments in dosing or even gradual discontinuation may be needed based on the patient's response and development.[3]

III. CASE PRESENTATION

An 8-year-old female developmentally delayed child was presented to the st.isabel's hospital with the chief complaints of accidental consumption of TCA- amitriptyline tablet (unknown quantity) approximately an hour back to ER . Continuous GCS (Glasgow coma scale) monitoring and serial lab investigations were conducted, revealing electrolyte imbalances .She was on medical management started with a proton pump inhibitor , serotonin 5-HT3 receptor antagonist and along with electrolyte replenisher.

Table 1 : Treatment given to the patient ;

SI.NO	DRUG NAME	INDICATION	DOSE	ROA	FREQUENCY
1	IVF NS	Dehydration	200ml	IV	0-0-1
2	Inj . $Mgso_4$	Hypomagnesemia	2ml	IV	1-0-0
3	Inj.calcium carbonate	Hyperkalemia	10ml	IV	0-0-1
4	Inj. Midazolam	Sedation	1mg	IV	1-0-0
5	Inj. Pantoprazole	GERD	20mg	IV	0-0-1
6	Inj.Emeset	Antiemetic	1cc	IV	1-0-1
7	Syp.pedicloryl	Sedative	10ml	P/O	1-0-0
8	Syp.P-250	Pain relief , fever reducer	5 ml	P/O	0-0-1

IV. TREATMENT

Treatment given to the patient is presented in Table 1.

V. DISCUSSION

An 8 -year-old female ,developmentally delayed child brought to st.isabel's hospital,mylapore with H/O accidental consumption of TCA tablet - amitriptyline (unknown) quantity approximately an hour back,from the time of arrival to ER.Where the history of present illness showed that the child was apparently normal one hour back when the parents noticed that some tablets spilled from the medicine box and child being drowsy presented to the hospital with drowsy state.No H/O Abnormal movements/fever/flushing.On admission patient was drowsy along with low GCS with tachycardia.

On physical and systemic examination,patient weighs - 23kg, Height - 125cm , MUAC(mid upper arm circumference) - 18cm , child is drowsy ;afebrile , PR - 180b/min , RR - 30cpm , BP - 100/58 mmHg , CRT - 2 sec , Spo2 - 99% RA , CVS - S1S2 (+) ; no murmur , RS - BAE equal ; no added sounds , PA - soft ; BS (+) , CNS - GCS : 6/15 (E1V1M4) withdraw no pain.On lab investigations showed electrolyte derangements . On other investigations;

- ECG showed first degree heart block on 11.7.23 and normal PR interval normal QRS complex on 13.7.23.[4]
- Radiological investigations showed ECHO (13.7.23) with impression structurally normal heart ; Normal biventricular function and ULTRALOW DOSE MULTISLICE CT - Brain (plain) (13.7.23) with impression CT study of the brain shows no significant abnormality,

Low GCS with tachycardia with ECG changes and shifted to PICU(pediatric intensive care unit) In PICU she had hypoxia and required HFNC (high flow nasal cannula) for maintenance . There was no evidence of myocardial dysfunction in ECHO . CT brain was done which was normal . She was initially kept on nil per oral ,serial monitoring done . The child received Mgso4 infusion once a day for 3 days suspected hypomagnesemia[5] . She was treated with IV fluids , Inj.Mgso4 , Inj. Calcium carbonate , Inj.Midazolam , Inj.pantoprazole , Inj.Emeset , Syp . pedicloryl , Syp . p-250. Child improved symptomatically with improvement in GCS and normalization of ECG changes . Child improved clinically and shifted to the general ward . She had fever spikes and was hemodynamically stable .

VI. CONCLUSION

Herewith,an 8-year-old child is advised with counseling sessions regarding the disease,treatment and also about lifestyle modifications . She improved systemically by treatment , counseling and got discharged . In order to improve patient outcomes and decrease mortality and morbidity, pharmacists play a crucial role in analyzing case studies of patients who have improved their quality of life. Amitriptyline poisoning, particularly in pediatric cases, is a serious medical emergency due to the drug's potent effects on the central nervous system and the heart. Amitriptyline is a tricyclic antidepressant (TCA) that is used for treating depression,where drowsiness with tachycardia is a common early sign related to TCA poisoning.Here the child is strictly advised about normal diet , Moderate activity and also advised properly about the regular medication on time and also advised not to take overdose medicines ,advised to eat fruits , vegetables to improve the health strongly[6] . Child is advised with counseling sessions regarding disease,treatment and lifestyle modifications . Now she improved systemically by treatment and got discharged with advanced improvement on 14.7.23 at 6 pm.

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