LIVER TRANSPLANT IN AN UNUSUAL CASE OF ACUTE FULMINANT HEPATIC FAILURE

Dr. Anusha Allu

Unit 6

Department of Gen Medicine

A 33-year-old male, shopkeeper, came with c/o

- Pain in epigastric region
- Vomiting, 6-7 episodes per day
- Loose stool, 4-5 episodes per day

} Since 3 days

- H/o alleged consumption of Ratol Poisoning (Yellow Phosphorus) 30 gms under the influence of alcohol 5 days back.
- Patient underwent treatment initially at a local hospital for 1 day and was referred to DPU.
- No h/o seizures, trauma, fever, hematemesis.

Past history:

- No H/o Diabetes Mellitus, Hypertension, TB

Personal history:

- Mixed diet
- Appetite reduced.
- Sleep disturbances present.
- Bladder habits are unaltered.
- Addictions : Chronic Alcoholic since 10 years
  Non- smoker, No drug addictions

On Examination :

- Patient was conscious, oriented
- Afebrile
- Pulse rate- 110 bpm
- BP – 110/70 mm of Hg
- SpO2 – 98% on RA
- RR- 18/min
- Deep Icterus present
- B/l subconjunctival haemorrhage present

- CVS - S1S2 present
- RS – AEBE+
- P/A – Epigastric tenderness present, No organomegaly
- CNS – Conscious

Working diagnosis

Yellow phosphorous poisoning with acute fulminant hepatic failure.

Investigations

HB	14.40
TLC	700
PLT	52000
HCT	42.7
MCV	92.80
MCH	31.30

Ammonia	132
Amylase	134
Lipase	251

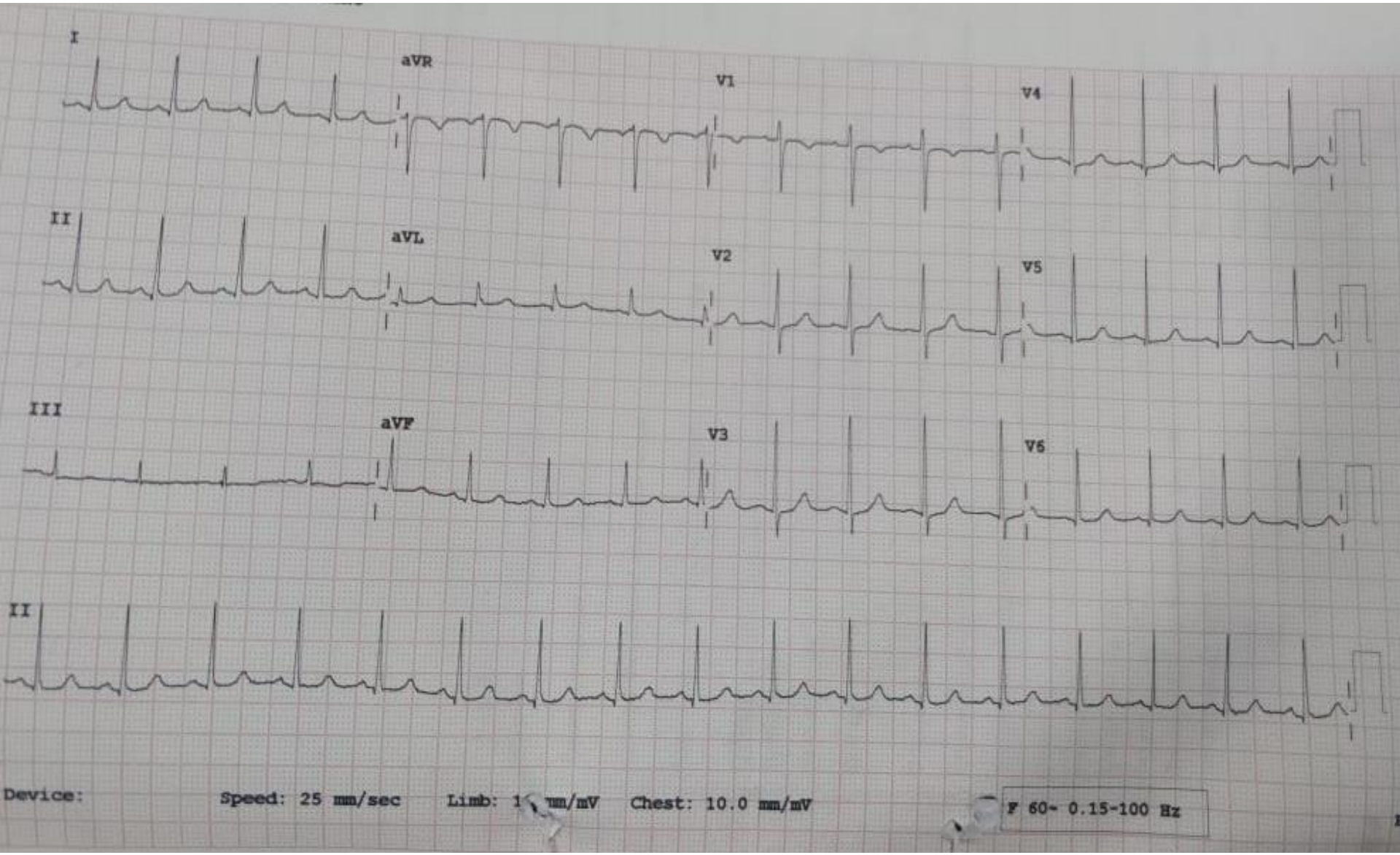
CX Ray-WNL

T.B	7.55
D.Bil	4.73
I.Bil	3.21
SGOT	4950
SGPT	1127
ALP	167
UREA	19
CREATININE	0.8
Na/K/Cl	139/3.7/101
ESR	1
S.Pr	6
Alb	3.48
Glb	2.3

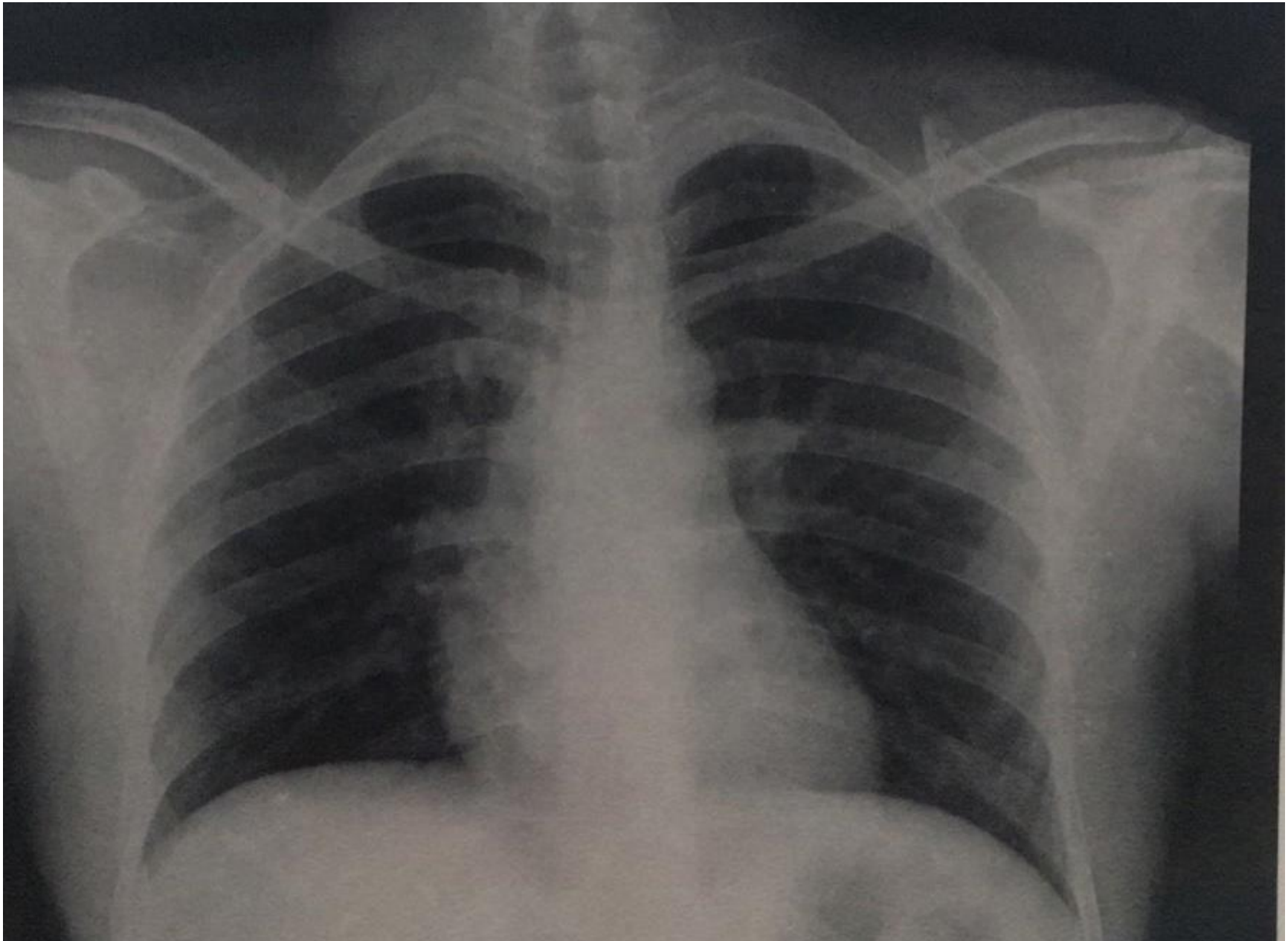
D-dimer	>10000
PT	38.20
INR	3.53
APTT	34
Pro Cal	1.89

Urine RM	
pH	5
Protein	Nil
Bile pig	+
RBC	2-3
Pus cells	1-2

ECG s/o sinus tachycardia



Chest X-ray- WNL



Treatment (day 1)

- RT was inserted
- Inj. Meropenem 1gm IV TDS
- Inj. Pantoprazole 40mg IV BD
- Inj. Ondansetron 8mg IV TDS
- Inj. Vit. K 30mg IV stat f/b Inj. Vit. K 10mg OD
- Inj. N-Acetyl Cysteine IV 150mg/kg in 200ml D5 in 1 hour f/b 50mg/kg in 500ml D5 over 4 hours f/b 100mg/kg in 1000ml D5 over 16 hours
- Syp. Lactulose 30ml HS
- Tab. Rifaximin 550mg BD
- 4 FFPs and 2 RDPs transfused.

Gastroenterology reference was done

- Adv – continue N-Acetyl Cysteine
- Inj. Glutathione 600mg IV I-0-0

Ophthalmology reference was done

- Adv – E/D Refresh tears QID for 2 weeks
- Tab. Vitamin C 500mg I-0-I for 30 days

USG Abdomen:

Mildly coarse echotexture of liver , Pseudocholecystic wall thickening.

2D-ECHO:

Normal LV Systolic function , No RWMA , EF- 60%

Day 2

- Patient's developed ***asterixis.***
- ***Subconjuctival haemorrhage*** increased, patient became *drowsy* and had ***irrelevant talks***.
- B/L plantars extensors.
- ***Inj. Glutathione***, Tab. Vit C and Refresh tears were added.
- Syp. Duphalac 30ml QID.
- FFPs and RDPs were transfused.
- Patient was intubated in view of low GCS

CT Brain : No obvious abnormality detected

Day 3-5

- Patient's GCS, PT- INR, Hemogram, Liver function tests and vitals were closely monitored.
- Further FFP and RDP transfusion was given as required.
- Continuous high grade fever was present.
- Patient developed ***Grade 4 hepatic encephalopathy***.
- Inj. Tigecycline 100mg IV stat f/b 50mg BD
- Inj. Fluconazole 200mg IV OD

Nephrology reference i/v/o Exchange transfusion

- Adv.- High volume plasma exchange with 5% Albumin along with CRRT

HB	14.40
TLC	7510
PLT	81000
HCT	42.7
MCV	92.70
MCH	31.50

TB	25
D.Bil	15
I.Bil	10
SGOT	353
SGPT	418
ALP	172
UREA	41
CREATININE	1.06
Na/K/Cl	140/4.3/98

Urine RM	
pH	5
Protein	1
Bile pig	+
RBC	2-3
Pus cells	1-2

D-dimer	>10000
PT	22.20
INR	2.99
APTT	29.80
Pro cal	1.89

Day 6

- Relatives were counselled regarding *liver transplantation* *i*/v/o fulminant hepatic failure.
- Gastroenterology reference was taken and was advised the same.
- Patient was registered in liver transplant list.
- Case was discussed with transplant coordinator and hospital management
- Patient was transferred to a different hospital in a cardiac ambulance due to the availability of immediate cadaveric liver transplant.

- Orthotopic liver transplant was done on Day 7.
- Surgery was uneventful and patient was shifted to ICU post-op.
- Patient's GCS and Labs started improving and patient was extubated on POD3.
- Patient made a full recovery and was discharged on POD5.


LINK 4


LONDON
TELEPHONE

Discussion

Yellow phosphorus poisoning

- This is a yellowish, waxy, crystalline solid with a garlicky odour.
- Usual fatal dose is about 60mg (1mg/kg body weight)
- Mode of action: YP is a protoplasmic poison, a potent hepatotoxin.

Clinical features :

- **Fulminant poisoning** : Results from ingestion of massive dose of about 1-2 gms. Death usually occurs in 12-24 hours. Clinical picture is of Peripheral Vascular collapse.
- **Acute poisoning** : Clinical manifestations usually occur in 3 stages

1st STAGE (upto 3 days)

- Local effects include severe burning pain, vomiting, diarrhoea and abdominal pain. Breath smells of garlic.
- Vomitus and Stools may be luminous in the dark. There may be hematemesis. Faint fumes may be emanate from the stools (**Smoky Stool Syndrome**)

2nd STAGE (upto several days)

- It is up to several days after the first stage subsides.
- This is an essentially symptom-free (treacherous) period , and the patient may feel well enough to be discharged from hospital.

3rd STAGE :

- This is due to systemic effects of phosphorous after it has been absorbed.
- There is a return of digestive symptoms with increased severity.
- **Liver damage** manifestations – tender hepatomegaly , jaundice, pruritus, bleeding from multiple sites finally hepatic encephalopathy (drowsiness, confusion , asterixis stupor and coma). At this stage there is mousy odour of breath (**Foetor hepaticus**).
- **Renal damage** (oliguria, haematuria, albuminuria and acute renal failure).
- ECG changes –Tachycardia, ST and T waves changes, QTc prolongation, low voltage QRS and various Arrhythmias.

Case Studies

J Clin Diagn Res. 2015 Jan; 9(1): OC10–OC13.
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PMCID: PMC4347107
PMID: 25738016

N-Acetyl Cysteine in the Management of Rodenticide Consumption — Life Saving?

Smitha Bhat[1] and Kumar P. Kenchetty[2]

- In an article published in the Journal of Clinical and Diagnostic Research, of a total of 100 patients admitted with yellow phosphorous poisoning, 21.6% of patients not treated with NAC died while the mortality was only 7.7% among those treated with NAC.
- Spontaneous recovery was common with patients who had ingested a lower dose of the poison.

Journal of Clinical and Experimental Hepatology

ORIGINAL ARTICLE | ARTICLES IN PRESS

Acute Liver Failure Secondary to Yellow Phosphorus Rodenticide Poisoning: Outcomes at a Center With Dedicated Liver Intensive Care and Transplant Unit

Ravi Mohanka • Prashantha Rao • Mitul Shah • ... Rohini Nalawade • Jacob As • Samir Shah •

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- In an article published in the Journal of Clinical and Experimental Hepatology, a total of 19 patients with rodenticide poisoning presented with Acute fulminant hepatic failure and all were considered for liver transplantation.
- 5 of the 19 underwent liver transplantation, 7 had spontaneous recovery and 7 patients died.
- There was no mortality after undergoing a liver transplant but the hospital and ICU stay was significantly longer for transplant patients because of the initial trial of supportive management and slower recovery after transplant, whereas it was shortest for non survivors because of rapidly progressive systemic toxicity.

TAKE HOME MESSAGE

- Liver transplant is the mainstay of treatment for patients presenting with acute fulminant hepatic failure not responding to standard supportive therapy.
- Patient should be placed on the transplant list at the earliest.
- Any close relative, friend, colleague with compatible blood group and with no comorbidities aged 18- 60 years can be a live donor.

THANK YOU