

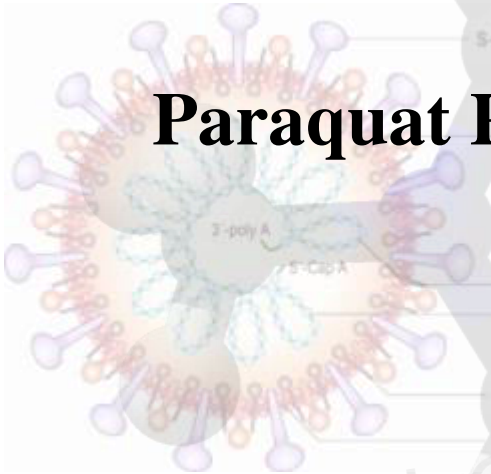
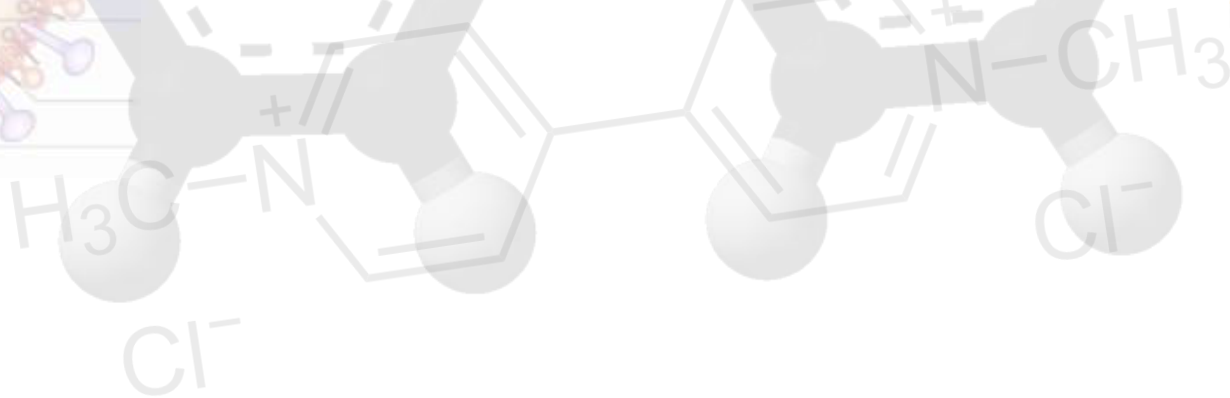
Toxicological emergencies In Covid 19 Pandemic Common Academic Programme

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CASE 1

Paraquat Poisoning with SARS-CoV-2



Initial Presentation

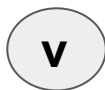


- 56 year old male was brought to Covid Triage with Alleged h/o Paraquat poison consumption and accidental spillage on face 6 hours before presentation.
- Complaints of fever, cough since 1 day.
- Breathlessness at rest since 1 day, Unable to pass urine since 1 day.
- Diabetic, and Hypertensive.
- Patient was initially taken to another hospital where he tested positive for Covid-19 and was referred to NMCH

On arrival

Level of Consciousness

A



P

U

Airway : Patent

Breathing : RR - 35/min
B/L air entry Equal, Crepts +
SpO2 - 85% on Room Air -> 100% on NRBM 15 Lit/min O2
Depth - Inadequate

Circulation : BP : 160/100 mmHg
HR : 110/min
All peripheral pulses felt.
CRT < 2 secs.

I.v line secured on right
cephalic vein with 18G
cannula

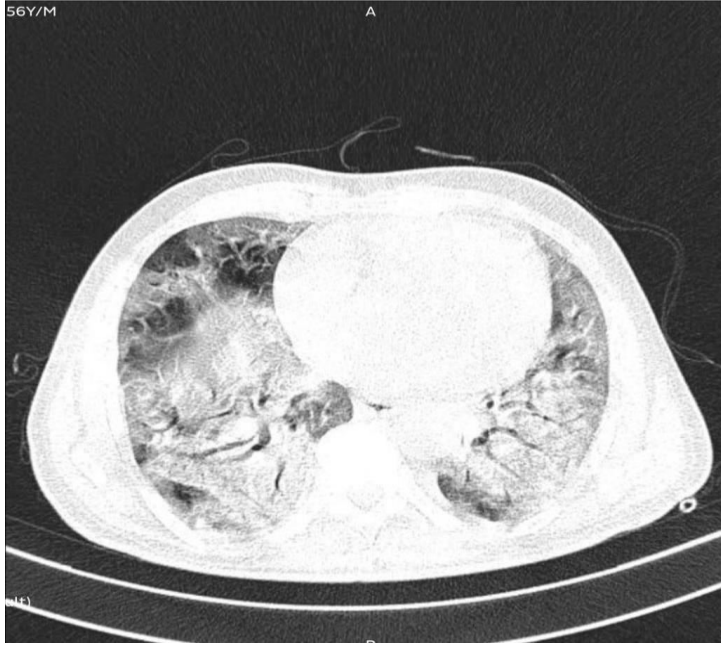
Disability : GCS : E4V5M6

Pupils: 2mm B/L equal reacting to light

CBG : 190 mg/dl.

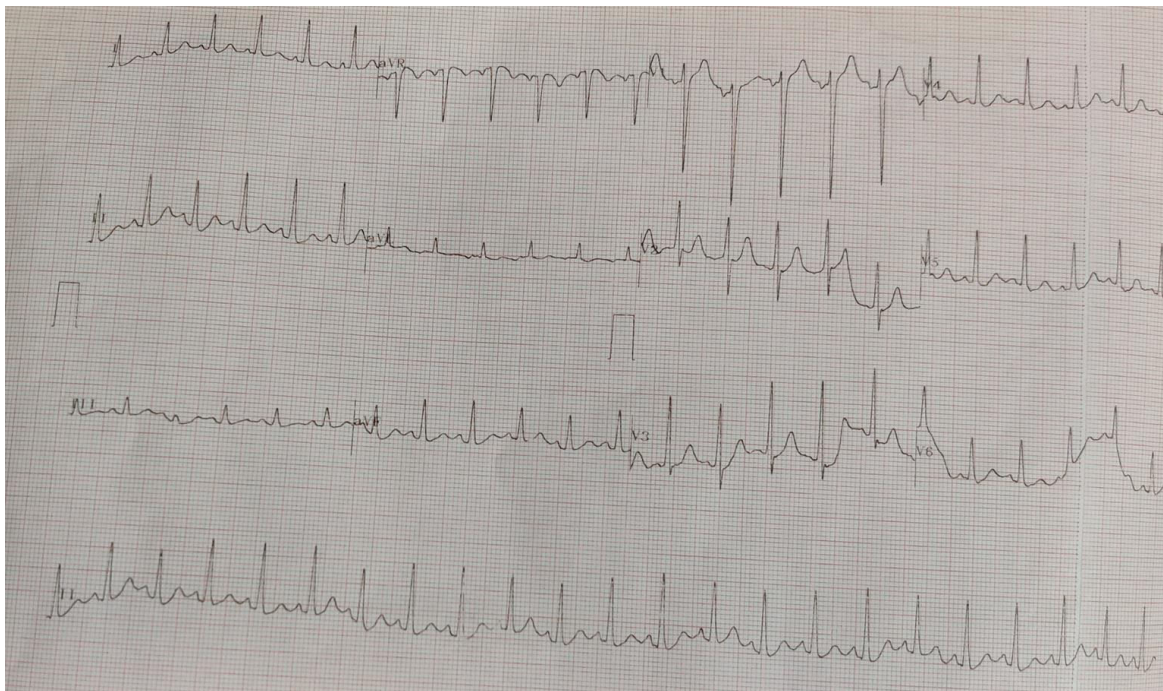
O/E

- Patient was conscious, coherent.
- Dark excoriation of Face probably due to spillage of Paraquat, Patient had the characteristic “Paraquat tongue” and Mucosal ulcers.
No signs of Pallor, Icterus, Cyanosis, Clubbing or Lymphedema.
- Breath sounds were B/L equal with crackles
- Per abdomen was soft



Diffuse ground glass opacities with crazy paving pattern & consolidatory changes in bilateral lung parenchyma

- 2D Echocardiography showed Normal left ventricular size, EF@ 50%. No RWMA and PE.



Sinus Tachycardia

Arterial		
Sample No.: 325		
Instrument:		
Model: GEM 3500		
S/N: 19122102		
Measured (37.0C)		
!pH	7.05	
!pCO2	15	mmHg
#pO2	147	mmHg
#Na+	130	mEq/L
!K+	6.9	mEq/L
Ca++	1.00	mmol/L
#Glu	63	mg/dL
#Lac	12.8	mmol/L
#Hct	32	%
Derived Parameters		
Ca++(7.4)	0.87	mmol/L
!HCO3-	4.2	mmol/L
HCO3std	6.0	mmol/L
#TCO2	4.7	mmol/L
#BEecf	-26.3	mmol/L
#BE(B)	-24.3	mmol/L
SO2c	98	%
#THbc	9.9	g/dL
Critical Limit		

Metabolic and lactic acidosis

On Arrival

S/no	Test	Result	Units
1	FERRITIN	405.66	ng/ml

1	SERUM UREA	142.2
CREATININE SERUM		

S/no	Test	Result
1	CREATININE	10.79

S/no	Test	Result
1	LACTATE DEHYDROGENASE { LDH }	561

INVESTIGATION	RESULT	NORMAL RANGE
C.R.P. (Quantitative)	391 mg/L	< 5 mg/L

Test	Result	Units
PTT	42.5	Seconds
PTT CONTROL	34.0	Seconds

S/no	Test	Result	Units	Range
1	HAEMOGLOBIN	12.3	gm/dl	(M)13.60-17.20 gm/dl (F)12-15 gm/dl
2	TOTAL COUNT WBC	17,600	Cells/cumm	4000-11000 Cells/cumm
3	DIFFERENTIAL COUNT			
4	NEUTROPHILS	83	%	40-75%
5	LYMPHOCYTES	09	%	20-40 %
6	MONOCYTES	07	%	2-8 %
7	EOSINOPHILS	01	%	1-6 %
8	BASOPHILS	00	%	0-1 %
9	METAMYELOCYTES			
10	BAND FORMS			
11	MYELOCYTES			
12	PROMYELOCYTES			
13	BLASTS			
14	PLATELET COUNT	1,88,000	Per cumm	150000-400000 Per cumr

	Day 1	Day 3	Day 8	Day 13
T.Bil	0.64	0.81	0.80	0.72
Direct	0.40	0.30	0.34	0.40
SGOT	2530	1925	685	147
SGPT	456	1000	826	383
Alk.Phos	580	520	482	419
T.Protein	5.6	5.4	5.41	5.0
S.Alb	3.2	2.8	2.8	3.0
A/G Ratio	1.3	1.1	1.1	1.5

Diagnosis :

B/L Covid Pneumonia with Respiratory Failure/ARDS.

Herbicide poisoning (Paraquat)

Acute Kidney Injury,

Ischemic Hepatitis

Management: Day 1 in Covid ICU

- NRB/NIV
- I.V Fluids NS/DNS @ 50ml/hour WITH 200MG THIAMINE
- Sodium Bicarbonate Bolus, followed by infusion
- InjMethylPred 120mg stat, 80mg bd
- Inj LMWX 60mg SC OD
- Inj Doxy 100mg BD
- Inj Piptaz 2.25mg TDS
- Inj N Acetyl Cysteine 2GMS BD
- Inj Vitamin c 1.5GM OD
- Inj Pantop 40mg BD
- Other Supportive Treatment Given & Planned for HD

Day 7 : 2 sessions of Hemodialysis done.

Test	Result	Units
CREATININE	6.98	mg/dl.

S/no	Test	Result	Units
1	SODIUM	138	meq/L.
2	POTASSIUM	4.4	meq/L
3	CHLORIDE	102	meq/L.

- Patient had of fever spikes, and blood pressure dropped to SBP 60 mmHg
- Vasopressors were initiated accordingly & titrated.
- Antibiotics were escalated to Carbapenam's& GPC.
- Cultures sent.

1	HAEMOGLOBIN	12.1	gm/dl
2	TOTAL COUNT WBC	32,000	Cells/cumm
3	DIFFERENTIAL COUNT		
4	NEUTROPHILS	94	%
5	LYMPHOCYTES	02	%
6	MONOCYTES	04	%
7	EOSINOPHILS	00	%
8	BASOPHILS	00	%
9	METAMYELOCYTES		
10	BAND FORMS		
11	MYELOCYTES		
12	PROMYELOCYTES		
13	BLASTS		
14	PLATELET COUNT	2,30,000	Per cumm

Day 15: 6 Sessions of Haemodialysis done

HAEMOGLOBIN	10.0	gm/dl
TOTAL COUNT WBC	19,200	Cells/cumm
DIFFERENTIAL COUNT		
NEUTROPHILS	95	%
LYMPHOCYTES	03	%
EOSINOPHILS	01	%
MONOCYTES	01	%
BASOPHILS	00	%
PLATELET COUNT	1,10,000	Per cumm
RBC COUNT	4.1	mill/cumm
PCV	33	vol%
MCV	80	Fl

Test	Result
CREATININE	3.7

Test	Result
SERUM UREA	187.1

- Psychiatry counselling given
- On day 28 patient was discharged in hemodynamically stable condition requiring 4-6liters oxygen, hence advised home oxygen therapy.
- Renal Parameters came down to normal after 8 sessions of HD.
- Review after 2 weeks.



During Discharge

- Paraquat ingestion can lead to severe and often fatal toxicity.
- No antidote
- It produces local as well as systemic effects.
- Inflammation of the tongue, oral mucosa and throat, corrosive injury to the gastrointestinal tract, renal tubular necrosis, hepatic necrosis, and pulmonary fibrosis, MODS.
- Has a very high mortality

Case 2

HERBICIDE POISONING WITH SARS CoV2

GLUFOSINATE

- 36 year old male was brought to Covid Triage with Alleged h/o Herbicide consumption.
- Patient was initially taken to another hospital where he was tested positive for Covid-19 and was referred to NMCH for further management.
- He was intubated there in view of low GCS.
- H/O One episode vomiting.
- H/O One episode GTCS.

- **Airway** : 7.5 ID ET Tube insitu
- **Breathing** : PC mode
RR-14
PEEP 5cm of H₂O
PC 15cm of H₂O
Fio₂ 60%
SpO₂: 100%
- **Circulation** : BP : 140/100 mmHg
HR : 55/min
All peripheral pulses felt.
CRT<2 secs.

I.v line secured on right cephalic vein with 18G cannula

- **Disability** : GCS - E1VTM1
Pupils: 2mm B/L equal reacting to light
CBG : 162 mg/dl.
- **General Examination**
No signs of Pallor, Icterus, Cyanosis, Clubbing or Lymphedema.
- **Systemic Examination**
CVS - S1 S2 +
CNS - E1VTM1
RS - Breath sounds were B/L equal
P/A - soft

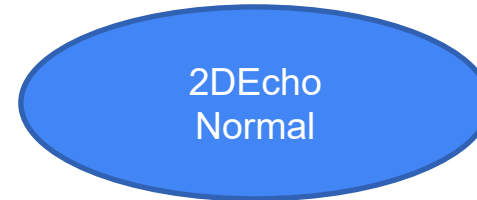
ABG

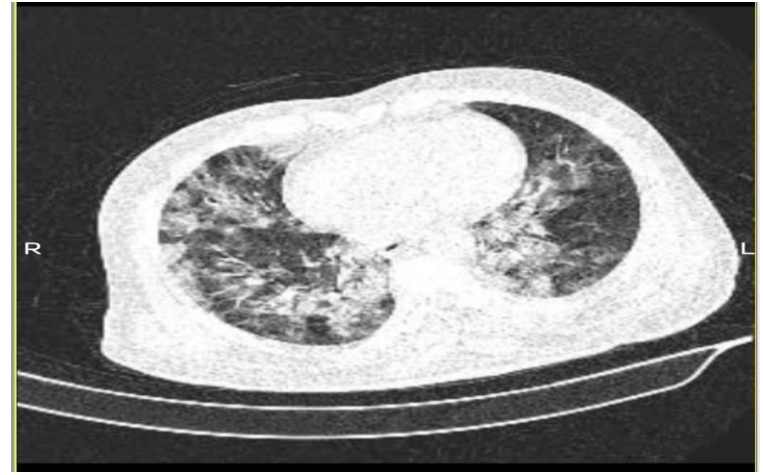
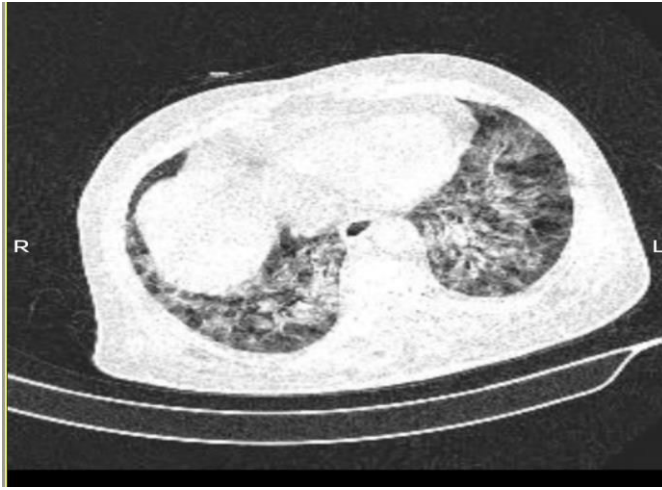
	Day1	Day 2
Ph	7.51	7.45
Pco2	35	30
Po2	187	251
Lac	1.4	2.1
Hco3	30	22.9
Na	141	144
K	3.0	2.5
Glu	108	87
Sao2	100	100
Hb	10.2	14.0
	Metabolic	
	Alkalosis	

HB	12.2
TC	9900
PLATELET COUNT	1,46,00

D DIMER	<0.14
FERRITIN	740.23
LDH	624
CRP	54

	ARRIVAL	DAY ₇
SODIUM	143	142
POTASSIUM	3.5	3.6
CHLORIDE	99	101
SE.UREA	74.6	30.3
CREATININE	1.9	0.71





- Diffuse B/L multifocal ground glass opacities of lung parenchyma
- CT severity score 14/25, CORADS 6.

Patient was shifted to COVID-ICU.

Diagnosis :

Herbicide poisoning

Siezuress

B/L covid Pneumonia with Respiratory Failure

AKI

Management: in Covid ICU

- Mechanical ventilation, RT Feeds, Iv Fluids.
- Inj : Decadran 8mg OD
- Inj : Levipil 500mg TDS
- Inj : Encorate 500mg TDS(STARTED IN VIEW OF REPEATED SEIZURES)
- Inj : LMWX 60mg SC OD
- Inj : Doxy 100mg BD
- Inj : Piptaz 2.25mg TDS
- Tab : Vitamin C 500 mg TID
- Tab : Pantop 40mg OD

- Inj : REMDESIVIR 200 mg in 100 ml ns over 1hr f/b 100 mg in 100 ml ns for next 5 days
- Inj : NAC 600mg BD
- Inj : Thiamine 400mg OD
- Cap:Vit D3 60K weekly once
- Tab : Ivermectin12mg OD for 5days
- Tab : Qutipin 25mg Half OD
- Nebulisation - Duolin and Budecort
- Syrup : Cremaffin 30ml HS/SOS

- Extubated on Day 6.
- On Day 8 patient was shifted to ward.
- Psychiatry consultation taken.
- On Day 10 discharged in hemodynamically stable condition.

- Most widely used herbicide.
- Acts by inhibiting the synthesis of glutamine in plants.
- Ingestion of undiluted glufosinate ammonium herbicide results in grave clinical outcomes.
- In severe cases, patients either succumb to death or suffer severe toxic reactions such as shock, respiratory arrest, unconsciousness, convulsions and amnesia.

CASE 3

OP POISONING WITH SARS CoV2

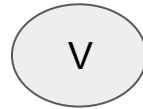
- A 76yr old male patient was brought to Covid Triage by his attenders with alleged history of consumption of an unknown quantity of Organophosphorus and Pyrethroid poison.
- Patient was taken to multiple local hospitals, where gastric lavage was done before arriving to our hospital, and arrived with a significant time delay of about 12 hours.

- RT-PCR was positive 2 days back.
- No h/o of loose stools
- No h/o vomiting
- No h/o involuntary micturition
- No h/o seizures

On arrival to ER

Level of Consciousness

A



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P

U

- **Airway** : Patent
- **Breathing:**BAE+
 - B/L crepts+
 - RR; 32/min
 - SpO2 – 80% @ RA
 - 100% with NIV

- **CIRCULATION** - HR : 52/ min
BP :140/90 mm of hg
CRT < 2 sec
All peripheral pulses felt

Iv canula
secure with
16G canula
on Rt hand

- **DISABILITY** - GCS : E3V5M6
CBG : 205 mg/dl
Pupils : B/l equal 2mm RL

- **Past History-K/C/O Hypertension.**

- **General examination**

No pallor,

No icterus,

No cyanosis,

No clubbing,

No lymphadenopathy,

No edema.

- **Systemic Examination**

CVS - S1S2 heard, no murmurs

RS - BAE+

CNS – E4V5M6

P/A - soft , bowel sounds +

COURSE IN HOSPITAL

DAY₁

- Ph;7.25,pO₂;50,pCO₂;28;HCO₃;15.2
- Lactate;4 Metabolic acidosis
- Hypoxemia

DAY₃

- Ph;7.35,pO₂;112,pCO₂;34,HCO₃;20
- Lactate;2.4

DAY₅

- Ph;7.40,pO₂;120,pCO₂;38;HCO₃;22
- Lactate;1.5

Investigations

	D1	D14
Hb	12	11.5
WBC	18,000	8,500
N	92	86
L	05	12
E	01	00
M	02	02
B	00	00
PLT	1,07,000	1,15,000
ESR	15ml/hr	20ml/hr
PT	15.9sec	16.9
APTT	33.6sec	34.0
INR	1.12	1.21
CRP	22	14
D-Dimer	1.48	1.26

On Arrival

Na+	138
K+	3.7
Cl-	118
S.Urea	40
S.Creat	0.81
Sr.Ferritin	640
LDH	340



- Bilateral Ground glass opacities with consolidation changes Parenchyma
- CORADS-6
- CT severity index - 2240

- 2D ECHO - No LV RWMA
Normal LV function
Moderate TR/ mildPAH
No LA/LV clot
EF 56%

Diagnosis :

Organophosphorus and pyrethroid poisoning

B/L COVID 19 Pneumonia with Respiratory Failure

Systemic Hypertention

TREATMENT

- NIV/NRB
- IV fluids - DNS @100ml/hr
- Inj : ATROPINE 2mg iv stat f/b 5mg/hr titrated according to the signs of atropinization
- Inj : PAM 2gm iv stat f/b 500 mg iv TID
- Inj : METHYLPREDNISOLONE 125mg stat f/b 80 mg TID

- Inj : REMDESIVIR 200 mg in 100 ml ns over 1hr f/b 100 mg in 100 ml ns for next 5 days
- Inj : LMWX 60 mg sc BD
- Inj : DOXY 200 mg iv BD
- Inj : VIT C 1.5 gm iv QID
- Inj : PANTOP 40 mg iv OD
- Tab : IVERMECTIN 12 mg stat f/b 4 days
- Tab : CILACAR 10 mg BD
- Tab : VIT D3 60K WEEKLY ONCE

- **On D3 PAM STOPED**

- **On D5**

HR ; 88/ min

BP ; 130/80 mm of Hg

RR ; 24/min

Pupils ; 2 mm BERL

NRBM with 12 lit O2/min/NIV SoS

Atropine tapered , glycopyrolate added

- **On D10 ,**

HR;78/min

BP;110/70 mm of hg

RR;20/min,

SpO2;100% with 6 liters O2/OFF NIV

- Patient shifted from covid ICU to covid ward.
- Psychiatry consultation taken.
- ON D14, Discharged.

- Organophosphorus compounds are phosphoric or phosphonic acid derivative which are irreversible inhibitors of both muscarinic and nicotinic acetyl cholinesterase (AChE) and affect the central nervous system.
- The leading cause of death in Organophosphorous poisoning is respiratory failure.
- The mortality rate depends on the type of compound used, amount ingested, general health of the patient and delay in diagnosis or treatment.
- Patients with Organophosphorous poisoning show a wide spectrum of adverse health effects ranging from gastrointestinal symptoms to cardiac, immunological or neurotoxic diseases

CASE 4

HAIR DYE POISONING WITH SARS-CoV-2

- A 31year old male brought to ER after 5 hours of alleged history of consumption of Hair dye 100ml (Supervasmol33,Paraphenylenediamine) near his residence.
- Initially taken to Government hospital, Nellore. After Primary care, referred to Narayana Medical College and Hospital for further management.



- On arrival to ER patient was unresponsive
Carotid Pulse absent,
- Monitor showed heart rate <40bpm
Pulseless electrical activity
- Initiated CPR immediately according to ACLS protocols and definitive airway(Cormack Lehane grade 4) has been secured with ET tube of size 7.0ID with all the adjunctive airway devices kept within reach in view of Cervicofacial edema.
- Due precautions are taken with adequate Personal Protective Equipment during the entire procedure of resuscitation.

- After 4 cycles of CPR, ROSC was attained and initiated post cardiac arrest care.
- In view of unstable hemodynamics, persistent hypotension, even after fluid resuscitation, vasopressors were initiated in ER and patient was shifted to Covid ICU for further management.

- Patient was kept on ventilatory support with Pressure Controlled Ventilation mode with FiO₂-100%, PEEP-5cm of H₂O, RR-15cycles/min and PC-15cm of H₂O and Vasopressor support with Noradrenaline @0.1microgram/kg/min.
- 2D Echocardiography
Normal left ventricular size, Ejection fraction 50%.

- His Nasopharyngeal swab RTPCR for SARS-Co-2 tested positive.
- HRCT showed B/L ground glass opacities with CT severity score of 20/40 with CORADS-6.
- Supportive treatment for Ischaemic hepatitis, Rhabdomyolysis, Myoglobinuria and Acute Renal Failure were given



Management: in Covid ICU

- Mechanical ventilation, RT Feeds, Iv Fluids
- Inj : METHYLPREDNISOLONE 125mg stat f/b 80 mg TID
- Inj : LMWX 60mg SC OD
- Inj NAC 150mg/kg Bolus over 1 hour, followed by 100mg/kg over 4hours, followed by 50mg/kg for next 24 hours, then maintenance of 600mg bd for next 14 days
- Inj : Doxy 100mg BD
- Inj : Piptaz 2.25mg TDS
- Tab : Vitamin C 1500 mg **BD**
- Tab : Pantop 40mg OD
- Forced Alkaline Diuresis given.

	Day 1	Day 4	Day 7	Day 11
FiO2	1.0	0.6	0.4	O2@6L
pH	6.80	7.29	7.45	7.47
pCO2	38	31	39	35
pO2	150	198	109	199
HCO-3	8.9	23.6	27.1	24.1
BE	-10.1	-1.2	2.9	1.9
Lac	5.30	1.6	1.3	1.1

INVESTIGATIONS

	Day 1	Day 4	Day 7	Day 11
Hb	14.2	11.8	10.6	12.5
WBC	20,600	18,100	14,000	11,000
N	88	76	74	70
L	10	16	13	06
M	01	08	03	06
E	01	00	05	00
B	00	00	00	00
PLT	1,40,000	1,30,000	2,07,000	4,56,000
ESR	60ml/hr	46ml/hr	40ml/hr	42ml/hr
PT	15.9sec	14.5sec	14.0sec	14.0sec
APTT	35.4sec	33.7sec	34.2sec	34.8sec
INR	1.12	1.00	1.02	1.04
CRP	194	80	<5	<5
D-Dimer	0.57	0.67	0.87	0.71
LDH	3230	4840	3140	2115

	Day 1	Day 4	Day 7	Day 11
T.Bil	0.69	0.95	0.85	0.82
Direct	0.40	0.5	0.34	0.40
SGOT	2330	1845	792	147
SGPT	456	1000	826	383
Alk.Phos	580	620	582	519
T.Protein	5.6	5.5	5.4	5.0
S.Alb	3.0	2.9	2.8	3.0
A/G Ratio	1.1	1.1	1.1	1.5
Na+	143	143	140	136
K+	4.4	4.4	4.5	4.2
Cl-	105	112	110	100
S.Urea	20	56	54	44
S.Creat	1.4	0.88	0.70	0.63
S.Ferritin	1028.23	854.99	514.56	295.38
Trop I	2.02(+ve)	0.48(+ve)	0.32(+ve)	0.11(-ve)
Urine mb		1114ng/ml	997ng/ml	

- Patient was weaned off from ventilator on 9th day and discharged in a stable condition on Twelfth day.
- Psychiatry consultation taken.

- The constituents of this hair dye include PPD (4%), resorcinol, propylene glycol, ethylenediaminetetraacetic acid (EDTA).
- Some of these ingredients are known toxins with multiorgan effects they damage the respiratory, muscular, renal, and hepatic systems and cause death.
- Poisoning due to PPD has a high mortality.
- Toxicity is dose dependent with increased morbidity and mortality.
- Consumption of even lower volumes resulted in hepatitis.
- Management of poisoning includes gastric lavage, antihistamines, parenteral steroids, and alkalinization of the urine.

