

# Acute Pancreatitis Related to Hemolysis During Hemodialysis due to Defective or Kinked Blood Tubing

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## Introduction

- Hemolysis during hemodialysis (HD) may be related to dialysate, extracorporeal circuit or patients' disease. Extracorporeal hemolysis may result from blood pump occlusion, miss-size needle and partial occlusion of catheter in relation to high BFR, and kinked or faulty tubing.
- We report a case with massive hemolysis during HD related to faulty or kinked blood tubing presenting as acute pancreatitis.

## Case Report

- A 32-year-old man with ESRD due to obstructive uropathy has been on HD for 3 years.
- On his HD day, he started HD at 5:37 AM at BFR 400 ml/min with a 14 gauge needle using right brachiocephalic AV fistula.
- At 6:08 AM, arterial pressure increased from -80 to -10 mmHg and venous pressure dropped from 170 to 50 mmHg at a BFR of 360 ml/min. He continued HD until 6:43 AM with repeated alarms.
- He was moved to another HD machine and completed HD for 3.45 hours with no issues.
- On departure, the patient felt well but staff noted that his color had changed to dark red.
- On his way home, he began to feel unwell with abdominal discomfort. In the evening, he developed severe abdomen pain with N/V and presented to ER. He also noticed yellowing of sclera and skin color.

- Physical exam: Alert and oriented, BP 122/88 mmHg, HR 98 bpm, RR 18/min, Temp 36.7c. He was jaundiced with a soft abdomen and mild tenderness. Rest of the exam was normal.

- Labs: reported hemolyzed samples 2 times:

Lab Data	
WBC: 6.78 K/uL	Na: 135 mmol/L
Hgb: 7.7 g/dl (from 10.5 g/dL 2 week prior)	K: 4.3 mmol/L
	Cl: 96 mmol/L
Platelets: 138 K/UL	Bicarb: 26 mmol/L
	BUN: 69 mg/dL
	Cr: 9.5 mg/dL

- LFTs drawn 4 times but all samples were reported hemolyzed
- When finally resulted:

Lab Data	
amylase 525 IU/L	T Bili 3.1 mg/dL
lipase 1260 IU/L	D Bili 0.5 mg/dL
ALT <5 IU/L	LDH 2300 IU/L
AST 156 IU/L	Haptoglobin <7.4 mg/dl
Alk Phos 69 IU/L	Protein 7.5 g/dL
GGT 36 IU/L	Albumin 4.0 g/dL

- Negative coombs test
- Blood smear showed no schistocytes, no other evidence of microangiopathic hemolysis
- RUQ US: No cholelithiasis and no evidence of acute cholecystitis. No ductal dilatation.

- CT Abdomen/Pelvis: Distended gallbladder with minimal pericholecystic fluid, no radiopaque gallstone postsurgical changes related to neobladder formation in right lower quadrant urostomy.
- MRCP: Dilated CBD without evidence of solid intra-luminal filling defect. Distention of the gallbladder with pericholecystic edema is noted.
- HIDA Scan: No evidence of acute cholecystitis, No evidence of common bile duct obstruction.
- He received 1 unit of PRBC during HD the next day.
- He continued to improve in the hospital.
- He was discharged home on third day to outpatient HD with no further issues.



patient skin color changed due to hemolysis

Repeat Lab Data Day 3		
WBC: 7.8 K/uL	amylase 555 IU/L	T Bili 24 mg/dL
Hgb: 9.0 g/dl	lipase 508 IU/L	D Bili 0.4 mg/dL
Platelets: 210 K/UL	ALT 17 IU/L	LDH 1488 IU/L
	AST 53 IU/L	Haptoglobin <7.4 mg/dl
	Alk Phos 62 IU/L	Protein 6.9 g/dL
		Albumin 4.0 g/dL

## Discussion

- Our patient developed severe mechanical hemolysis during HD likely related to blood tubing in view of temporal relation to out-patient HD with repeated alarms. Peripheral blood smear failed to show schistocytes or other evidence of micro-angiopathic hemolysis. His Coombs test was negative making auto-immune hemolytic anemia unlikely. This was supported by a sudden change in his skin color to dark red after HD.
- His blood was externally hemolyzed and returned, and this is why all labs were reported repeatedly "hemolyzed".
- Free hemoglobin in the blood is toxic to pancreas and can cause acute pancreatitis. His presentation was related to acute pancreatitis and improved with no further hemolysis and free hemoglobin production.

## References

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