Hepatitis B Causing Severe Hemolysis and Multi-Organ Failure in A Patient With Undiagnosed G6PD Deficiency

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INTRODUCTION

- Hepatitis B is a viral infection that attacks the liver and can cause both acute and chronic disease.
- WHO estimates 1.5 million new infections each year. Most people remain asymptomatic; however, some people have acute illness that lasts several weeks and can be complicated with acute liver failure
- Glucose-6-phosphate dehydrogenase (G6PD) X-linked deficiency is the most common human enzymopathy, affecting an estimated 400 million people worldwide, 3-5% greater in males, and mostly in infants.

CASE REPORT

- A 73-year-old male with past medical history of chronic idiopathic thrombocytopenic purpura presented with lethargy, loss of appetite, scleral icterus and dark colored urine.
- On examination, vitals were within normal range. Diffuse jaundice was present, along with hepatomegaly. Patient was alert and oriented.
- Patient's labs were concerning for hemolysis as well as acute liver and renal failure. (labs noted in table)
- Patient's imaging including CT abdomen/pelvis was negative for pathology (no signs of obstruction).
- A renal biopsy was done which was suggestive of acute tubular injury with pigmented bilirubin and hemoglobin casts.

TREATMENT

- The patient was started on hemodialysis due to electrolyte derangement and oliguria.
- The patient was given intravenous fluids and was started on Entecavir for acute complicated Hepatitis B infection.
- The patient's liver function, hemolysis labs, and renal function continued to improve, and he no longer required dialysis after several weeks of treatment.

Wbc	17.3 x10^3/mcL
Hgb	12.9 g/dL
Platelets	173 x10^3/mcL
Reticulocyte %	20.95%
Absolute retic	0.5129 x10^6/mcL (0.028-0.08)

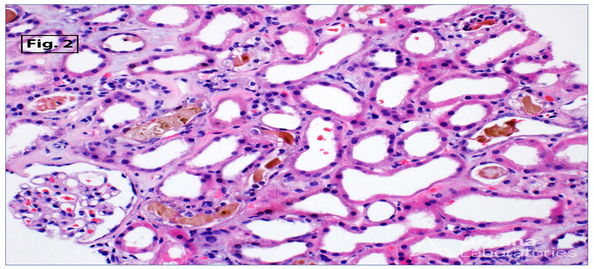
Hep A Ab IgM	Non-reactive
Hep B core Ab Total	Reactive
Hep B Surface Ab	Non-reactive
Hep B core Ab IgM	Reactive
Hep B surface Ag	Reactive
Log10 HBV IU/mL	2.914 log IntlUnit/mL

G6PD	60 U/10E12 RBC (127-427)
Haptoglobin	10 md/dL
Sodium	130 mmol/L
Potassium	5.6 mmol/L
AST	3017 unit/L
ALT	2712 unit/L
BUN	74 mg/dL
Creatinine	3.6 mg/dL
Bilirubin Total	72.4 mg/dL
Bilirubin Direct	41.8 mg/dL
Bilirubin indirect	30.6 mg/dL

	On Admission	Post Treatment
AST	3017 Unit/L	19 Unit/L
ALT	2712 Unit/L	16 Unit/L
BUN	74 mg/dL	22 mg/dL
Creatinine	4.2 mg/dL	1.3 mg/dL
Total Bilirubin	72.4 mg/dL	2.0 mg/dL

DISCUSSION

- Hemolytic anemia has been associated with viral hepatitis, but the degree is usually mild to moderate.
- In cases of severe intravascular hemolysis, a diagnosis in addition to hepatitis should be considered.
- When severe hemolysis is seen, one should investigate other underlying causes such as G6PD deficiency.
- Our case is unique since this is the first reported case of severe hemolysis and renal failure precipitated by acute HBV in an undiagnosed G6PD deficient patient.
- Treatment with entecavir caused marked improvement in clinical manifestations as well as laboratory tests.



Bile Cast Nephropathy- Kidney biopsy (Source :Arkanalabs.com)

CONCLUSION

This case highlights the need for early recognition and establishing diagnosis of complicated hepatitis B leading to severe hemolysis as well as renal failure and prompt treatment with anti-viral therapy as well as supportive treatment or plasmapheresis (severe cases) for G6PD deficiency which can help with early recovery of patients and prevent life threatening organ failure.

References

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