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WILSON'S DISEASE PRESENTING WITH HAEMATURIA AND SWELLING

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Summary

Wilson's disease gene located in Chromosime 3 is also expressed in Kidneys. So Wilson's disease may have renal manifestations either as primary event or secondarily as Hepato renal syndrome. Patients commonly manifest as Fanconi syndrome or Urolithiasis. Haematuria and proteinuria is a rare manifestation. Here we are presenting a case who initially presented with haematuria and proteinuria (Acute nephritic syndrome) which masked features of Wilson's disease and late diagnosis.

Key words

Wilsons disease; haematuria; proteinuria

Introduction

Wilson's disease is a rare autosomal recessive genetic disorder of copper metabolism, which is characterised by hepatic and neurological disease. The disease affects between one in 30 000 and one in 100 000 individuals, and was first described as a syndrome by Kinnier Wilson in 1912[1]. It is caused by mutations in the gene encoding a copper-transporting P-type ATPase, ATP7B, which is important for copper excretion into bile, leading to copper accumulation[2]. The deposition of copper in tissues such as the liver, brain, kidney joints and cornea can cause multisystem damage. We report a case of wilson's disease presented with renal complains which is usually a rare manifestation.

Case Report

A 17 years old boy was admitted in the nephrology unit of CMCH on 15th September 2010 with gradual generalized swelling of the body for 2 months complicated by darkening of urine for 2 weeks prior to admission. He confessed a similar history 1 yr back, persisted for a month, treated locally without investigating. He denied history of prior sore throat, significant reduction in urine output, previous jaundice or any significant illness.

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On admission he was anemic and edematous with normal BP and other vitals and there was moderate ascites. Initial investigation revealed Hb- 8.5 g/dl, ESR-75 mm in first hr, dimorphic blood picture with neutrophilia. Urine R/E revealed 1+ albumin with plenty of RBC and 3-4 pus cell/HPF, 24 hr UTP was 490 mg but S. Albumin was 1.7 g/dl and normal S.creatinine.

During these evaluationed patient became progressively drowsy and on 4th hospital day he was found stuporous and icteric, GCS-6, reflexes exaggerated with bilateral planter extensor and rigidity in the limbs. Investigation showed non gap acidosis(N^+ 140,K^+ 3.5, Cl^- 117,HCO_3^- 21), splenomegaly and ascites on USG, raised PT (29 s) and bilirubin (8 mg/dl) but normal AST and ALT. Viral markers were negative but endoscopy revealed esophageal varices with portal hypertensive gastropathy Kayser Fleischer (KF) ring was confirmed by the ophthalmologist . S.ceruloplasmin and 24 hr urinary copper were done which were 1.6 mg/dl (normal < 2mg/dl) and 122μg (normal <30 μg) respectively, supported the diagnosis of Wilson's disease. He was treated conservatively as hepatic encephalopathy and zinc was introduced.

Discussion

Wilson's disease (WD) is an autosomal recessive condition characterized by inability of the liver to transport and store normally absorbed dietary copper resulting in abnormal deposition of copper in the basal ganglia, eyes, liver and other tissues thus causing cellular damage and corresponding clinical symptoms of the involved system[3,4,5]. Because of individual variation, the main organs that copper deposits are different and so symptoms vary. The initial symptoms in younger patients are usually seen in the liver and bone, and in elder patients or those with longer course of disease, the symptoms of the nervous system can be typical, whereas patients with renal involvement as the initial symptom are less, which is easy to be misdiagnosed[6,7]. Chronic active hepatitis, culminating in cirrhosis is the most common hepatic presentation, but some patients present with fulminant liver failure and recurrent hepatitis[7,8]. Typical neurological sign include tremor, rigidity, drooling, speech changes, incoordination, tremor, difficulty with fine motor tasks, and gait difficulties whereas psychiatric manifestations include compulsive behavior, aggression, depression, impulsive behavior, and phobias[8].

KF ring is the most pathognomic sign of wilson's disease[7,9]. Diagnosis is based on clinical evaluation along with biochemical and neuroimaging confirmation. Biochemical studies reveal a low serum ceruloplasmin level (<20 mg/ dl) and increased urinary copper excretion (more than >100 µg copper per 24 hours). Hepatic copper estimation, of more than 250 g/g of dry tissue (Normal 15-55 g/g) is the most definitive method of diagnosis[7,9]. In patients with WD, neuroimaging abnormalities occur in gray matter of lentiform, caudate and thalamic nuclei[9,10]. Cerebral atrophy with ventricular dilatation especially of the frontal horns and cerebellar atrophy are also frequently observed in WD[10].

Renal involvement occurs in any period of WD, but its mechanism is unknown. It is recognized that copper mainly deposits in the epithelium of proximal and distal convoluted tubules. The thickening of basement membrane interferes with the reabsorption function of renal tubule, resulting in renal glucosuria, aminoaciduria, hypercalcinuria, phosphaturia, and proteinuria[7]. Proteinuria is due to the low molecular weight protein[11]. Renal biopsy of patients with WD complicated by renal impairment showed mesangial proliferative nephritis, which may be due to high deposits of copper in the glomerular mesangium, causing mesangial proliferation and glomerular damage, characterized by renal hematuria, proteinuria, and renal failure[12,13]. A study on children with WD in China revealed 25 out of 85 patient had renal involvement where 7 patients were initially presented with renal menifestations[14].

Our patient, though ultimately developed hepatic decompensation, was presented to us with nonglomerular hematuria and proteinuria which supports tubular involvement also supported by hyperchloremic non gap acidosis , probably Type 2 RTA .These features are supported by Ying et al. as renal menifestations of WD[14]. Although his 24 hr phosphate excretion was 532 mg and there was no glycosuria, but full blown Fanconi is usually rare[7,11]. Renal biopsy could not be done as patient did not give permission. He was improved later with zinc therapy and a urine routine examination a months later revealed absence of protein and reduction in RBC (2-4/HPF).

Conclusion

Wilson's Disease is actually a rare one, but one of the commonest causes of childhood chronic liver disease. But it may be present with renal abnormalities as in our cases and renal involvement may complicate any phase of Wilson's disease. Therefore WD should be excluded from patients with edema, hematuria, proteinuria and other abnormalities that cannot be explained by primary renal disease.Patients with WD should take such examinations as urinalysis, renal function (including tubule function) and ultrasound of the kidney to find out renal impairment as it is a potentially treatable condition.

Disclosure

All the authors declared no competing interestes

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