Dioctophymatosis Renalis in Humans: First Case Report from India

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Abstract

Dioctophymatosis is an infestation by Dioctophyma renalis (the giant kidney worm), a relatively uncommon parasitic roundworm²³ that infects carnivorous mammals. Since the early 1900s, dioctophymatosis has been confirmed in < 20 humans worldwide. A 70-year-old man attended our Hospital, complaining of having expelled 2 large worms while urination along with haematuria 2 days post-admission. On MR UROGRAM we confirmed it as dioctophyma renale. Wet mount preparation of urine under microscopy showed eggs specific for the parasite. On review of literature we found that this was the first case reported in India.

Introduction

Infestation by Dioctophyma renalis (the giant kidney worm), an uncommon parasitic roundworm that infects carnivorous mammals, has been reported from various countries. It inhabits temperate regions worldwide, particularly areas with freshwater streams and lakes. It is found most often in minks, canids, and other carnivorous mammals. This species lacks host specificity, and can infect many mammal species, including humans, although only rarely. Dioctophymatosis¹ has been confirmed in < 20 individuals, but it can have potentially fatal effects on renal function if not diagnosed and treated properly. This paper reports a case of human dioctophymatosis in Karimnagar, the first case reported from India.

Case History

A 70 yrs old man who was a known diabetic and hypertensive since 10 yrs came to emergency with complaints of high grade fever since 10 days and altered sensorium since morning on the day of admission. At the time of admission his GRBS was 580 mg/dl. And his vitals were normal except sinus tachycardia due to high grade fever. On systemic examination he was drowsy and incoherent. He was catheterised and urine was turbid on appearance in urobag. So we started treating him as hyperglycaemic hyperosmolar state and with in 2 days his general condition improved and fever also subsided.

On 3 rd day of admission he complained us that 2 worms (Figure 1) came out of urethra along with haematuria. We took the urine sample along with worms to our microbiology dept parasitic lab. Then we came to know that it was a rare parasite known as dioctophyme renale also called as gaint kidney worm whose incidence is very rare in the world, and on review of literature we found that this was the first case to be recorded from India. Microscopic wetmount examination (Figure 4) of urine showed multiple eggs characteristic of that parasite.

Lab investigations

Hemoglobin-9.1gm/dl, Total Leucocyte Count –11 700 cells/mm³, Platelets -3.76 lakhs, ESR-30 mm/hr. Complete Urine Examination: albumin: trace, sugar:+++, RBC-2-4, Pus cells:plenty, epithelial cells3-4/hpf, ketone bodies-
negative, Liver Function Test – Total Protein:6.5, Albumin:3.5, Globulin:3.0, A/G-1.1, T.Bilirubin-0.7, D.B-0.2, ALT-28, AST-30, ALP-75, GGT-28, Renal Function Test - Blood Urea-100mg/dl, Serum Creatinine -4.0. HIV- Negative, Hbs ag –Negative, ECG- Normal,. Fasting Lipid Profile – Normal, 2D echo-normal, Serum electrolytes: Na:127mmol/L, Potassium:2.6mmol/L, Chlorides:95mmol/L, fasting blood sugar -240mg/dl, post lunch serum glucose-377 mg/dl.

Usg abdomen:1.fatty liver 2.mild right hydroureronephrosis 3.diffuse increase in echotexture of bilateral kidneys.4.bladder debris.

He underwent MR urogram which showed multiple parasites in both kidneys, right more than left in both
Discussion

Dioctophyma renalis (giant kidney worm) is one of the largest parasitic round worms that infects carnivorous mammals, such as minks, canids, dogs. Adult male worms (Figure 2) measure up to 35 cm x 3-6 mm wide, and females (Figure 3) up to 103 cm x 5-12 mm wide. Both sexes are blood-red in color with a round body and blunt slightly tapered ends. The worms usually occur in the kidneys and more frequently in the right organ than in the left. The eggs are voided in urine and first-stage larvae develop in 15-100 days. Embryonated eggs are ingested by aquatic intermediate hosts, almost always an aquatic oligochaete (aquatic worm). Within the intermediate
host, the larvae molt twice and become infectious. The hosts come into contact with the parasite by ingesting encysted larvae in raw fish (eg, pike, bullhead) or frogs, or by ingesting an infected annelid worm.

The larvae penetrate the bowel wall and migrate first to the liver. Juvenile larvae mature over a period of about 50 days in the liver parenchyma, and then migrate directly to the kidneys to mature further; they may remain alive for up to 5 years. The worm(s) cause obstruction, hydrenephrosis, and destruction of the renal parenchyma. Unilateral nephrectomy is the treatment of choice if the other kidney is unaffected.

Human infections by D. renalis have been very rare, and seem to have occurred accidentally. No more than 20 confirmed human cases have been reported worldwide, in which worms were found in various body parts, eg the kidneys and peritoneal cavity. These include 4 cases of dioctophymatid larvae found in the subcutaneous nodules.

In the case reported here, the patient was a 70-year-old man who lived in a small village, near a lake that was used for daily activities, such as bathing, washing clothes, and defecation (both humans and cattle). The etiology of this case was not clear, but it was suspected that he became infected by drinking water or eating raw or undercooked fish. This case had some unique aspects: the worms infected the both kidneys, right more than left, eggs were found in the urinary sediment. The natural habit of worms is to destroy the renal parenchyma, so that nephrectomy is the only treatment; it should be performed quickly, before other complications occur.

### Conclusion

So this was diagnosed as Dioctophyme renale with history clinical features, lab investigations, and imaging modalities.

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### References