

What caused Hydronephrosis? Hydronephrosis Associated with Enlarged Lymph Nodes in The Patient with Tuberculous Mesenteric Lymphadenitis

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ABSTRACT

Background: A common cause of hydronephrosis is a ureteral stone. Here, we report a rare case of enlarged lymph nodes-induced hydronephrosis. The patient, who was suffering from fever, flank pain and hydronephrosis, had been treated with antibiotics and lithagogues for 3 months with the suspected diagnosis of calculous pyelonephritis, but had not shown any improvement. Finally, the patient was diagnosed as tuberculous mesenteric lymphadenitis and antituberculous therapy led to the improvement of the disease. So we could have a conclusion that the ureteral narrowing by compression of the tuberculously enlarged lymph nodes, not uretral stone, caused the hydronephrosis.

Keywords: Hydronephrosis, Ureteral Stone, Tuberculous Mesenteric Lymphadenitis.

Article Information

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INTRODUCTION

Hydronephrosis is commonly due to ureteral stone and is often complicated by calculous pyelonephritis.^{1,2} And the hydronephrosis may occur due to the ureteral narrowing by the compression of tumors and others¹. Here, we describe a case of hydronephrosis developed in a patient with tuberculous mesenteric lymphadenitis.

In no finding of a definitive stone shadow on imaging, high dose antibiotics in combination with fluid loading, smooth muscle relaxants and diuretics for facilitating stone passage was administered to her for 3 months, but there was no improvement; thus she was admitted to our hospital for the exact diagnosis and treatment in October 2022.

Case Report

A 41-year-old female patient was suffering from the fever, persistent dull pain of right flank and occasional lower abdominal pain and was diagnosed as calculous pelonephritis based on the findings of the persistent ureteral dilatation and hydronephrosis on several abdominal ultrasonographies at different hospitals.

At admission, the body temperature ranged from 37.2°C to 38.3°C with higher in the afternoon, and her pulse rate from 96 to 120 beats/min with relative tachycardia. There were the tenderness of ileocecal part, the tapping pain of renal region and the tenderness of the upper and lower ureteral painful points in the right side.

The initial laboratory test findings were erythrocyte sedimentation rate 36 mm/h, red blood cell count $3.6 \times 10^{12}/L$, white blood cell count $8.9 \times 10^9/L$, ALT 19U/L, AST 45 U/L, and ZTT 15.2 U/L.

Urinalysis revealed normal colour and transparency, pH of 6.3, no protein, no bacteria including *Mycobacterium tuberculosis*, and 1 erythrocyte, 20~30 leukocytes and 5~8 squamous cells per high power field in centrifuged urine sediment. Ultrasonography showed the proximal ureteral dilatation (6mm in diameter of 1st narrow site) and hydronephrosis grade 1 in right side(Fig. 1), but failed to show any stone shadow.

No stones were found on the abdominal plain film. Intravenous pyelogram (IVP) was not performed because of positive result of hypersensitivity test for contrast material. Tuberculin skin test for exclusive diagnosis of the tuberculosis was strongly positive(induration 2.5cm) and the ultrasonography which was done again for the purpose of discovering the lymph node swelling revealed a number of lymph node enlargements of 1.8~2.5cm(major axis : minor axis is about 2:1) in the intraabdominal and retroperitoneal spaces (Fig. 2).



Fig.1. Hydronephrosis and ureteral dilatation.

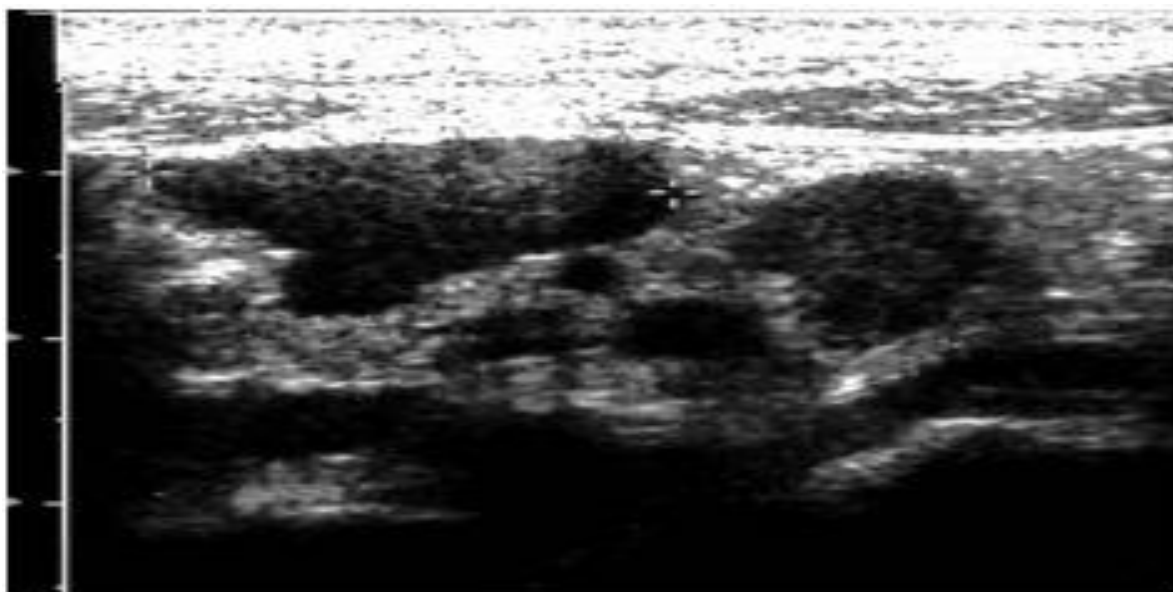


Fig.2 Enlarged lymph nodes.

Based on the physical, laboratory and instrumental examinations, the diagnosis of tuberculous mesenteric lymphadenitis was made and antituberculous therapy was applied for 6 months. On the seventh day after the start of treatment, the body temperature returned to normal. The abdominal ultrasonography showed that the hydronephrosis and enlarged lymph nodes began to gradually decrease after 20 days and disappeared after 2 months.

DISCUSSION

It is the common practice that the ureteral stone commonly cause the hydronephrosis and is often complicated by calculous pyelonephritis.^{1,2} In this case, the previous suspected diagnosis was the calculous pyelonephritis based on the related findings including the fever, flank pain, urine leukocytes, hydronephrosis and proximal ureteral dilatation. However, the long-term treatment for calculous pyelonephritis did not improve the symptoms including fever and hydronephrosis.

In fact, the hydronephrosis had been used as an important diagnostic basis for calculous pyelonephritis in the preceding stages of this case. However, the patient had no colic attack and hematuria, and the imaging tests did not detect any stone shadow and the treatment for the calculous pyelonephritis did not control the symptoms. And the malformation, tuberculosis or tumor of the kidney and ureter were not recognized.

So we focused on the other causes of the hydronephrosis. Although we have never experienced it, there is a report that the hydronephrosis may occur due to the ureteral narrowing by the compression of tumors and others¹.

In some cases, US examiner might not try to find out the lymph nodes if the detailed referral was not given, because the simultaneous visualization of the ureter and lymph node is difficult and the change of

transducer with different frequency is needed for exact evaluation on the lymph nodes. Eventually the multiple lymph nodes' swelling with tuberculous character in morphology were found in the intraabdominal and retroperitoneal spaces on ultrasonography.

Tuberculin skin test performed to identify tuberculous cause of lymph node enlargements was also strongly positive and antituberculous therapy improved the symptoms and disease. Based on these findings, the diagnosis of tuberculous mesenteric lymphadenitis was confirmed. Unfortunately, more detailed imaging tests for more objective visualization on the relation of the ureteral dilatation and swelling of lymph nodes were not attempted, because there were no the past history of tuberculosis, primary lesion of tuberculosis and calcification shadow on X-ray and we did not have a firm belief on the diagnosis of tuberculous swelling of lymph nodes until the antituberculous drugs controlled the symptoms. In the literatures, it is said to be important to consider an ureteral stone as the cause of hydronephrosis and ureteral dilatation even if imaging does not reveal any ureteral stones^{1,3}.

However, in this case, it was considered that the hydronephrosis was not due to ureteral stones, but the ureteral narrowing by compression of the tuberculously enlarged lymph nodes (probably in the retroperitoneal space).

CONCLUSION

The lymph node swelling around ureters should be considered as a cause of hydronephrosis too. And we have learned that it is also important to suspect unusual causes in the examinations and diagnosis of the diseases.

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REFERENCES

- [1] Burton D Rose. Diagnosis of urinary tract obstruction and hydronephrosis, Up to Date 2012
- [2] Emil A. Taniguchi et al., Smith's General Urology. The McGraw-Hill

Companies, 2008; 246-278.

- [3] Gary C Curhan et al. Diagnosis and acute management of suspected nephrolithiasis in adults, Up to Date 2018