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# Benign Hydronephrosis and Elevated of Serum Levels of Carbohydrate Antigen CA 19-9: A Case Report

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Manuscript Preparation E
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**Patient:** Male, 58
**Final Diagnosis:** Hydronephrosis
**Symptoms:** Blunt abdominal pain • constipation • constipation
**Medication:** —
**Clinical Procedure:** Extracorporeal shock wave lithotripsy and percutaneous nephrostolithotomy
**Specialty:** Gastroenterology and Hepatology

**Objective:** Rare co-existance of disease or pathology

**Background:** Carbohydrate tumor-associated antigen (CA 19-9) has been shown to be upregulated in other malignant tumors including gastric, ovarian, hepatocellular, and colorectal carcinoma as well as benign diseases of the biliary track such as pancreatitis, cholangitis, and choledocholithiasis. According to the available literature, in several cases of benign hydronephrosis and in a few cases of benign renal diseases, elevated CA 19-9 has been noted.

**Case Report:** A 58-year-old Caucasian male patient was admitted in our clinic with complaints about blunt abdominal pain in the past two-month period localized in the right lumbar region and irradiating into the right inguinal area, constipation, abdominal bloating, and intermittent hematuria.

The concentration of serum CA 19-9 was 3500 U/mL. Urine cytology provided no signs of abnormality. Intravenous urography visualized right-sided pyelon and ureter duplex with the defect in contrast shade of the pyelon, caused by a stag horn calculus. Contrast added computerized axial tomography of the abdomen and pelvis visualized the pyelon casted concretion spreading throughout the right pyelon, with ureterohydronephrosis with the distal block for passage of the contrast to the distal part of the ureter.

**Conclusions:** There is no doubt that CA 19-9 level is occasionally elevated in patients with obstructive urolithiasis as it was in our case. In the routine medical praxis, urolithiasis should not be neglected in the differential diagnosis of elevated concentrations of CA 19-9 marker.

**MeSH Keywords:** CA-19-9 Antigen • Hydronephrosis • Kidney Calculi

**Full-text PDF:** http://www.amjcaserep.com/abstract/index/idArt/897900

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## Background

Carbohydrate tumor-associated antigen 19-9 (CA 19-9) is a 36-kDa glycolipid that is a sensitive, specific tumor marker for pancreatic, gastric, and hepatobiliary malignancies [1–4]. However, CA 19-9 has also been shown to be upregulated in other malignant tumors including gastric, ovarian, hepatocellular, and colorectal carcinoma, as well as benign diseases of the biliary track such as pancreatitis, cholangitis, and choledocholithiasis [5–7]. According to the available literature, in several cases of benign hydronephrosis and in a few cases of benign renal diseases, elevated CA 19-9 has been noted [8,9].

In this paper, the authors discuss another case of benign, ureteric calculi induced hydronephrosis, associated with elevated serum level of CA 19-9.

## Case Report

A 58-year-old Caucasian male patient was admitted to our clinic with the complaints about blunt abdominal pain in the past two-month period localized in the right lumbar region and irradiating into the right inguinal area, constipation, abdominal bloating, and intermittent hematuria. His medical history involved repetitive nephrolithiasis that was, on admission, in the phase of acute worsening.

On admittance, the patient's general physical examination revealed a solid, elastic palpable mass and remarkable tenderness in the right lumbar region. His family history anamnesis was positive for the presence of the pancreatic cancer. The routine laboratory parameters were found to be in the normal ranges, except markers of inflammation (erythrocyte sedimentation rate 90 mm at the end of the first hour, C-reactive protein 46 mg/L, plasma fibrinogen 6 g/L) and biochemical signs for a mild renal failure (serum creatinine concentration: 150 µmol/L, blood urea level of 10 mmol/L). The urine culture was negative for bacterial presence. Urine PH was less than 5.5. The concentration of CA 19-9 was 3500 U/mL. Urine cytology provided no signs of abnormality. Plain abdominal radiography showed a radio-opaque shadowing in the right kidney that appeared to be a partial stag horn calculus. Intravenous urography, ordered by the experienced urologist-operator, showed ureterohydronephrosis with the distal block for passage of the contrast, caused by a stag horn calculus. Also, there was defect in the contrast shade of the pyelon (Figure 1). Contrast added computerized axial tomography of the abdomen and pelvis visualized the pyelon casted concretion spreading throughout the right pyelon, with ureterohydronephrosis with the distal block for passage of the contrast to the distal part of the ureter (Figure 2). No sign of morphological abnormalities was detected in the liver, gall bladder, pancreas, or in the genitourinary

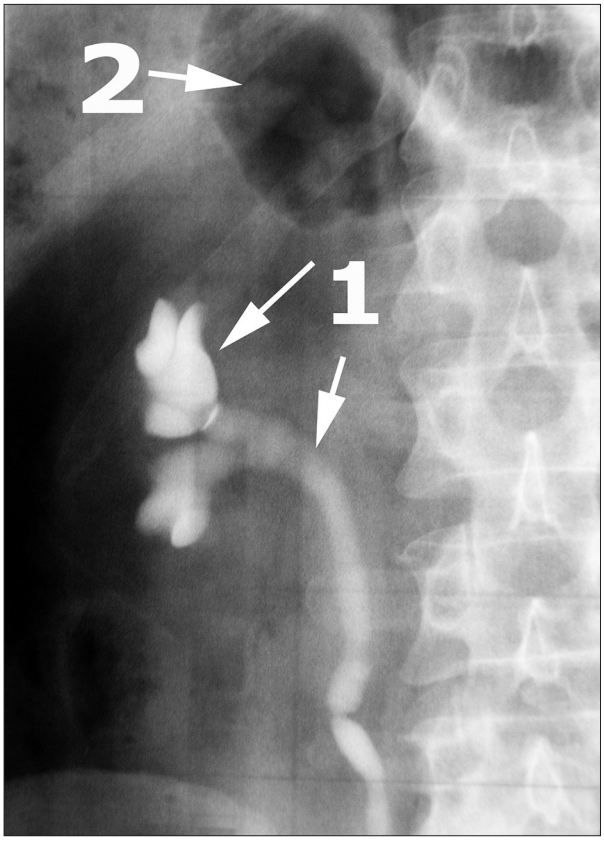


**Figure 1.** Intravenous pyelogram of the right kidney. (1) Dilated pyelon and initial part of the ureter. (2) Shadow of the double pelvis and ureter on the right side, adjacent to pyelon with calculosis.

tract. Ileocolonoscopy did not reveal any kind of pathological changes. Cystoscopy revealed four, small yellowish concrements in the bladder. Right retrograde pyelography exhibited shade defect of about 4 mm in the distal part of the right ureter, which appeared to be caused by radiolucent stones. Excretory urography revealed no significant excretion from the right kidney, indicating the lack of renal function.

The patient was successfully treated by a combined treatment of extracorporeal shock wave lithotripsy and percutaneous nephrostolithotomy. Stones fragments were spontaneously eliminated. The patient was free of urolithiasis two months after treatment. His renal function completely recovered and the serum CA 19-9 level and all laboratory parameters of inflammation were reduced to the normal range after removal of the stones, and the patient had no recurrence to the time of the report.

## Discussion

In this case report, the authors present a unique case of renal hydronephrosis associated with elevated serum concentration


**Figure 2.** CT scans of abdomen. Arrows are marking the position of the kidney stone.

of CA 19-9, the first case reported so far in this area of Europe. An association of benign urological disease associated with elevated CA 19-9 levels have already been described. Suzuki et al. [8] have revealed increased serum levels of CA 19-9 in one fourth of 68 patients (123 serum samples) with benign hydronephrosis. The inflammation and subsequent damage of the urinary epithelium, obstruction of the CA 19-9 discharge pathway, and dysfunction of the organs that metabolize CA 19-9 results in elevation of CA 19-9 serum levels [8,9].

Immunohistochemical studies demonstrated that Ca 19-9 was expressed in the renal tubular epithelium as well as in the urothelium of the renal pelvis, whereas other cells were not positive for the anti-CA 19-9 antibody [9–11]. The mechanism of abnormal elevations in serum CA 19-9 in patients with benign hydronephrosis is, however, not clear. The excessive production of CA 199 – in the renal pelvic mucosa may result from long-term chronic inflammation secondary to hydronephrosis, or CA 19-9 may be synthesized in the renal pelvic membrane and released into the circulation by an increase in the internal pressure of the renal pelvis due to the hydronephrosis [11–14]. On the other hand, some authors have suggested that the relationship between CA 19-9 values and hydronephrosis was not found to be statistically meaningful and that there is no predictive importance of CA 19-9 as the parameter of urinary obstruction [14].

## Conclusions

There is no doubt that CA 19-9 level is occasionally elevated in patients with obstructive urolithiasis as it was in our case. In the routine medical praxis, urolithiasis should not be neglected in the differential diagnosis of elevated concentrations of CA 19-9 marker.

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