

Extracorporeal Shock-Wave Lithotripsy's Unusual Complication: Retroperitoneal Gas

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Abstract

After extracorporeal shock-wave lithotripsy (ESWL) in renal stone disease, complications such as hematuria, pain, infection, and less often complications such as pancreatitis, myocardial infarction can be observed. We aimed to present retroperitoneal gas findings, an unusual complication post-ESWL detected on Computed Tomography. Lumbar vertebral injury due to ESWL should be kept in mind in the presence of retroperitoneal gas.

Keywords: Emergency radiology, Computed tomography, Nephrolithiasis, Extracorporeal shock wave therapy, Lithotripsy.

Introduction

Extracorporeal shock-wave lithotripsy (ESWL) has been used in the treatment of renal stone disease since the early 80's⁽¹⁾. Its easy application, noninvasiveness and high success rate in renal stone treatment increase the frequency of use in renal and ureteral stone treatment⁽²⁾. Stone localization and stone burden are important for patient selection in ESWL. ESWL has contraindications such as pregnancy, uncontrolled urinary tract infections, coagulopathy, renal artery and aortic aneurysm, severe obesity and skeletal system abnormalities. Complications such as pain, hematuria, hypertension and less often pancreatitis, pneumonitis may occur in the early period after ESWL^(3,4). In this article, it is aimed to present the retroperitoneal gas, an unusual complication of ESWL, detected in the computed tomography (CT) images of the patient who applied to the emergency department with left lower quadrant pain after ESWL.

Case Report

A 70-year-old female patient was admitted to the emergency room with the complaints of increasing nausea and left lower quadrant pain after ESWL performed 1 week ago. In her medical history, the patient reported that the complaint of bloody urine that developed after ESWL regressed, her complaint of dysuria was ongoing, and she had no complaints of low back pain. Vital signs of the patient were stable, and physical examination revealed no findings other than tenderness in the left lower quadrant. In the laboratory examina-

tion of the patient, white blood cell count was found to be 12.15 K / uL, creatinine 1.33 mg / dl, CRP 209 mg / L and leukocyte positivity in urine analysis. In the ultrasonographic examination; hydronephrosis, minimal perirenal fluid and stone fragments were seen in the left kidney. In addition to ultrasound findings, linear density increases in perirenal fat tissue and minimal perirenal fluid were observed in unenhanced abdominal CT examination. On unenhanced CT images, gas densities were observed in the retroperitoneal area in the left paraaortic, prevertebral region and medial to the psoas muscle (Figure 1). In order to rule out the differential diagnosis of gastrointestinal system perforation or fistulization, after oral contrast material administration, abdominal CT was repeated and contrast agent extralumination was not observed. Compared to the patient's abdominal CT in 'Picture Archiving and Communication Systems' (PACS) 2 years ago; It was observed that gas densities were newly emerged in this examination, and degenerative vacuum phenomenon was found in the intervertebral disc of the L2-L3 level in the previous examination (Figure 2). Irregularity was observed in the intervertebral disc anterior section of L2-L3 level in the CT after ESWL, and it was found that the vacuum phenomenon observed at this level in the previous examination was not observed in this examination (Figure 3). Gas densities in the retroperitoneal area were evaluated as intervertebral disc / vertebral corpus injury that developed after ESWL. Treatment was initiated for the diagnosis of pyelonephritis developing after ESWL, and it was decided to follow-up retroperitoneal gas densities. We obtained written and oral informed consent of the patient for the publication of her case and any accompanying images.

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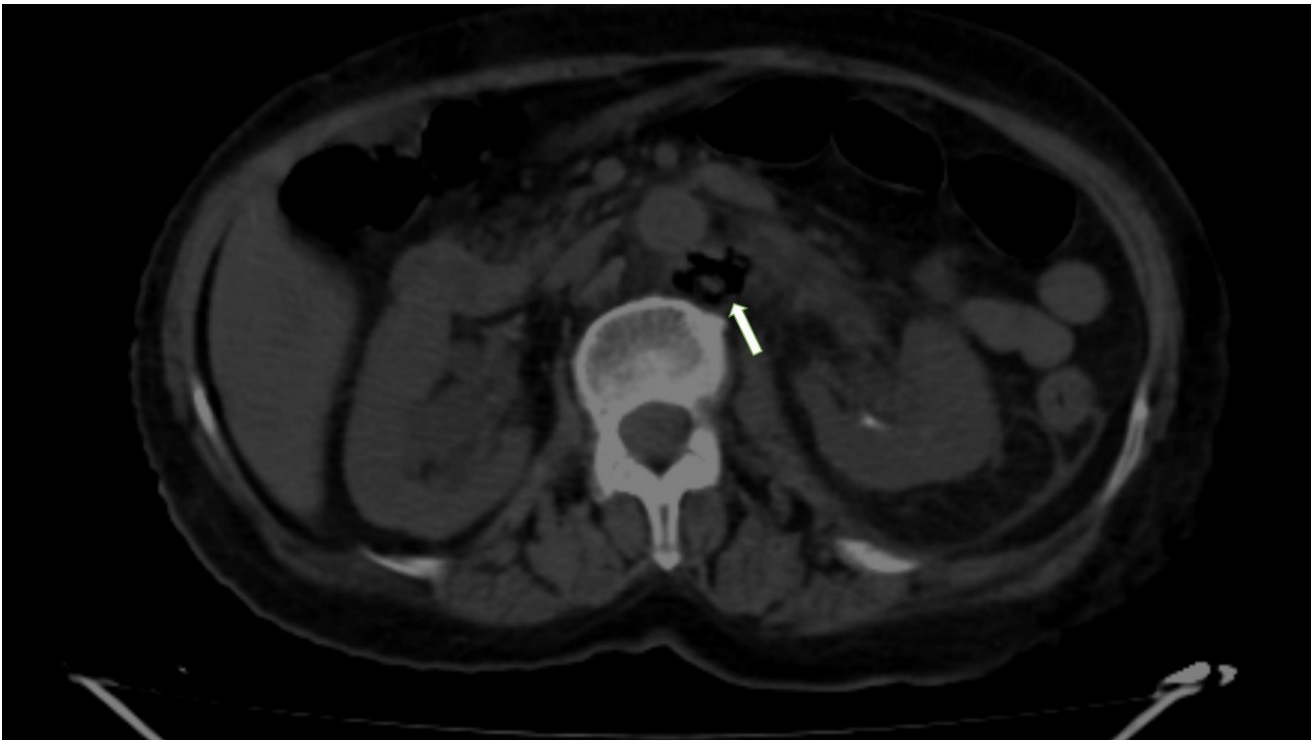


Figure 1.

Discussion

It has been reported that the effectiveness of ESWL treatment and the risk of possible complications in renal stone disease are related to the ESWL shock rate. Accordingly, it has been reported that 60 shock / minute rate in ESWL reduces the risk of kidney damage compared to 120 shocks / minute rate and provides an improvement up to 16% in the treatment of small stones^(3,5). Apart from the frequency and number of shocks given in ESWL, the location and mineral density of the stone are also associated with post-ESWL complications and treatment success. An increase in the risk of developing renal hematoma in obese patients and a decrease in the success rate of the treatment can be expected due to the increase of the distance between the lithotripter and the stone in the effectiveness of ESWL in obese patients. It has been reported that the distance between the skin and the stone is less than 10-11 cm is an independent predictor of ESWL treatment⁽⁶⁾. Providing an unobstructed path for shock wave during ESWL will reduce the incidence of organ complications in the kidney or ureter neighborhood. Real-time imaging is important to enable shocks to reach the stone, and it has been reported that increased fluoroscopy time increases the effectiveness of stone treatment, despite the risk of radiation⁽⁷⁾. Although there are no similar cases in the English literature, it was reported that retroperitoneal air was detected in 6 patients who underwent epidural anesthesia in the control radiographs obtained after ESWL⁽⁸⁾. There is no interventional procedure in this case before or after ESWL.

Conclusion

As a result, especially in elderly patients with lumbar degeneration, lumbar vertebral injury due to ESWL should be kept in mind in the presence of retroperitoneal gas.

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Figure 2.



Figure 3.

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fragment in the left kidney in unenhanced computed tomography image(axial view).

2. In the sagittal reformatted computed tomography image of the case 2 years ago, gas density due to degenerative vacuum phenomenon is observed in the L2-L3 level intervertebral disc.
3. In the new sagittal reformatted computed tomography image of the case, there is no gas density in the L2-L3 level intervertebral disc and gas densities are observed in the prevertebral area.

Figure Legends

1. Left paraaortic gas density (arrow) in the retroperitoneal area, linear densities in the left perirenal adipose tissue, stone