



## Case Report

# Xanthogranulomatous pyelonephritis, and emphysematous pyelonephritis: Two rare conditions in one patient

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## ABSTRACT

**Introduction:** What makes this case unique are combined features of two rare renal disease processes in one patient within one kidney which are Xanthogranulomatous pyelonephritis, and emphysematous pyelonephritis. **Case presentation:** The patient had main general symptoms like fever, chills, fatigue, and right abdominal pain. He had urea = 77, White Blood Cells = 15,46, and urine culture was positive for Klebsiella. He had right total nephrectomy as a therapeutic intervention. **Conclusion:** It is important to note that it could we have two diseases or more in one case related to one systemic organ so, we have to evaluate all possible causes of current status of the patient.

## 1. Introduction

Pyelonephritis is defined as inflammation affecting the tubules, interstitium, and renal pelvis. It occurs in two forms. Acute pyelonephritis is generally caused by bacterial infection and is associated with urinary tract infection. Chronic pyelonephritis is a more complex disorder; bacterial infection plays a dominant role, but other factors (vesicoureteral reflux, obstruction) predispose to repeat episodes of acute pyelonephritis. The infecting organisms are derived from the patient's own fecal flora. By far the most common is *Escherichia coli*, followed by *Proteus*, *Klebsiella*, and *Enterobacter* [1]. Xanthogranulomatous pyelonephritis is an uncommon and distinct type of chronic infectious pyelonephritis in which yellow, lobulated masses diffusely replace the renal architecture. It is more common in adults in the fifth through the seventh decades. It is twice as common in women as in men. Urinary obstruction is almost invariably present and is most often caused by stones [2]. Emphysematous pyelonephritis has been defined as necrotizing infection of the renal parenchyma and its surrounding areas that result in the presence of gas in the renal parenchyma, collecting system or perinephric tissue [3]. (see Fig. 1)

## 2. Case report

A 63-year-old man was admitted to the emergency room with complaint of bad general status, and right abdominal pain for two months with fever and chills. He received antibiotic therapy like

gentamycin, for two weeks in venous route without any improvement. He had clinical history of diabetes mellitus and radical cystectomy since ten years. He treated diabetes mellitus with metformine 1000mg. He did radical cystectomy because of multiple stones found in it. At physical examination, he was conscious, blood pressure 11/7 mmHg (N = 12/8), pulse 85 bpm (N = 60–100), respiratory rate 28 rpm (N = 12–30), temperature 38,5 C (N = 37 C). Laboratory tests showed Red Blood Cells 2,65 (4-5 millions), Haemoglobin 8,9 (N = 14–18), White blood Cells 15,46 (4000–10000), Platelets 446 (N = 150–450) with creatinine 1,8 (0,8-1,2), urea 77 mg/dl (N = 12–40), glucose 358mg/dl (N = 60–100), CRP 33 unit/ml. Urine culture was positive for klebsiella. Abdominal ultrasound revealed enlargement of right kidney with moderate hydronephrosis and calculus measures 2 cm in renal pelvis. computed tomography showed voluminous right kidney measures (13 × 13) cm with severe hydronephrosis and cortical thinning, air content, and oval large aggregates of turbid fluid with bullous gas formations. he was submitted to right total nephrectomy (see Fig. 2).

## 3. Discussion

This study has points of strength that are available pathologic information, and limitation which are insufficient radiologic imaging. This work has been reported in line with SCARE 2020 criteria [4]. This case was diagnosed by the corresponding author and operated by surgical crew in Al-mowassat university hospital at 2021 June. The relevant medical literature talked about the two conditions as separated entities.

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Here, we have the two entities combined in one patient. Also, in one kidney. The patient was male. The main causes that interpreter patient condition are radical cystectomy he had since ten years and diabetes mellitus too. Gross examination reveals Yellow nodular tumor masses replace the renal pyramids, suppurative inflammation and edema begins within pelvic mucosa and sinus fat resulting in pelvicaliceal ulceration and fat necrosis, and nodules may become confluent and eventually involve renal capsule, perinephric fat, and retroperitoneal tissue [5]. [Figure\(3\)](#). Microscopic examination reveals central nidus of necrotic debris and neutrophils (microabscesses) with admixture of inflammatory cells, including lymphocytes, plasma cells, and Surrounding sheets of lipid-laden macrophages with abundant clear cytoplasm (may resemble clear cell renal cell carcinoma). Multinucleated giant cells and spindled fibroblasts surrounding macrophages (may resemble sarcomatoid carcinoma) may be seen [5]. Figure (1),(2).

#### 4. Conclusion

It is necessary to look for all available findings about multiple disease processes and study it not only the direct cause.

#### Ethical approval

No ethical approval was needed.

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#### Author contribution

Rihan: study design, writing the paper. Mariam: study design, writing the paper.

#### Registration of research studies

1. Name of the registry: Research Registry.
2. Unique Identifying number or registration ID: Research registry 7028  
<https://www.researchregistry.com/browse-the-registry#home/>

#### Guarantor

Dr. Rihan Mhmed Ali.

#### Consent

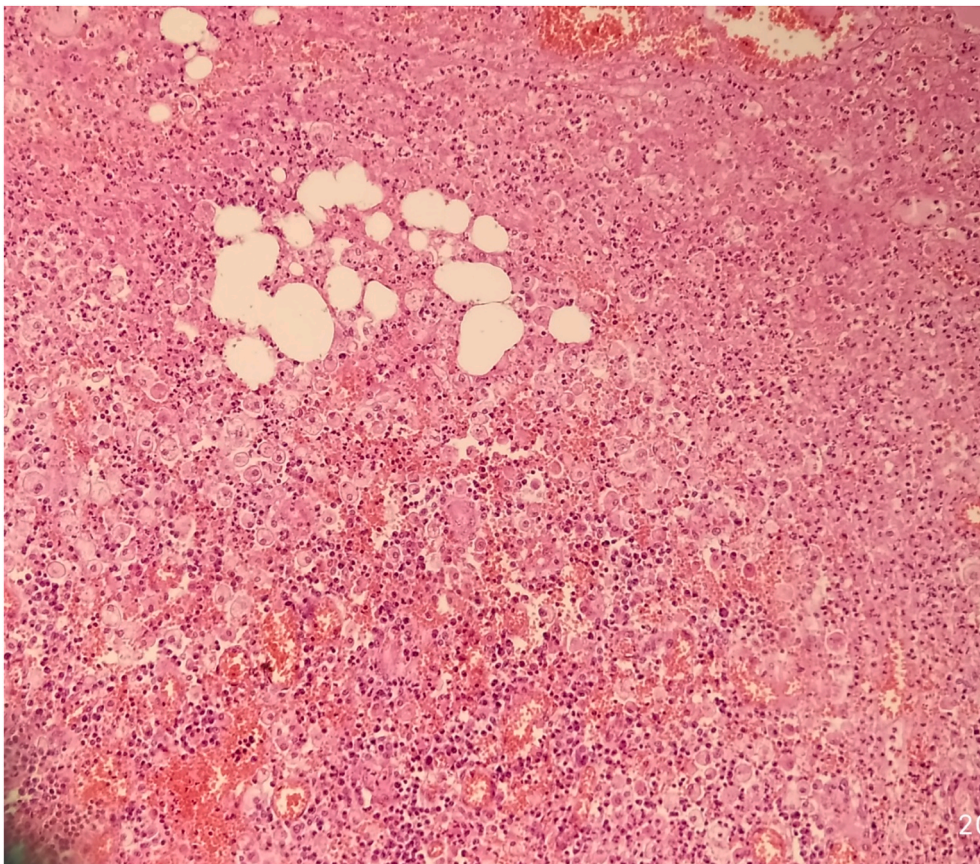
No consent obtained as consent form was not applicable to our study. This is retrospective study, collecting data from file of patients.

#### Provenance and peer review

Not commissioned, externally peer reviewed.

#### Declaration of competing interest

All the authors declare that they have no conflicts of interest.



**Fig. 1.** Microscopic picture of granulomas of foamy macrophages and gas formation (empty space) with neutrophils and hemorrhage.



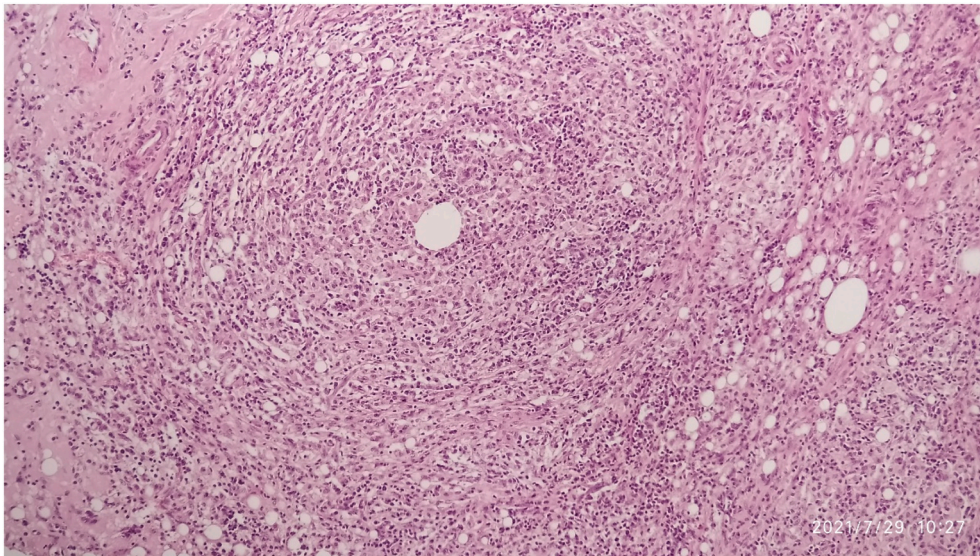


Fig. 2. Microscopic picture of granuloma of foamy macrophages and gas formation (empty space).



Fig. 3. Gross appearance of this case reveals diffuse fibrosis and abscess formations.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2021.102767>.

#### References

- [1] V. Kumar, A.K. Abbas, J.C. Aster, Robbins and Cotran Pathologic Basis of Disease, ninth ed., Elsevier/Saunders, Philadelphia, PA, 2015.
- [2] J. Rosai, et al., Rosai and Ackerman Surgical Pathology, eleventh ed., Elsevier/Saunders, Philadelphia, PA, 2011.
- [3] S.S. Ubee, L. McGlynn, M. Fordham, Emphysematous pyelonephritis, *BJU Int.* 107 (9) (2011 May) 1474–1478, <https://doi.org/10.1111/j.1464-410X.2010.09660.x>. Epub 2010 Sep 14. PMID: 20840327.
- [4] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, for the SCARE Group, The SCARE 2020 guideline: updating consensus surgical Case REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230.
- [5] Gattuso, et al., DIFFERENTIAL DIAGNOSIS IN SURGICAL PATHOLOGY, third ed., Elsevier/Saunders, Philadelphia, PA, 2015.