

## Retroperitoneal necrotizing fasciitis in a 42-year-old male patient: A case report

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### Abstract

Necrotizing fasciitis are rare but often fatal conditions. A retroperitoneal origin is very rare and limited to case studies; very few cases have been reported in the literature. We report a case of 42-year-old man who presented with complaints of severe constipation and paraumbilical abdominal pain for the past three days. On examination, the abdomen was tender and distended, giving features of bowel obstruction. CT scan suggested perforated appendix. Subsequent exploration revealed retroperitoneal necrotizing fasciitis extending down to right testicular tissue. After extensive debridement and drain placement, the patient was admitted to the ICU where with intensive monitoring and aggressive daily dressing the patient survived. Necrotizing fasciitis of other anatomical sites are easier to diagnose as compared to retroperitoneal origin. Focus should be placed while dealing with cases of acute abdomen as early diagnosis and prompt surgical intervention is needed for successful treatment.

**Keywords:** Necrotizing Fasciitis, Retroperitoneal Spaces, Acute Abdomen.

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### Introduction

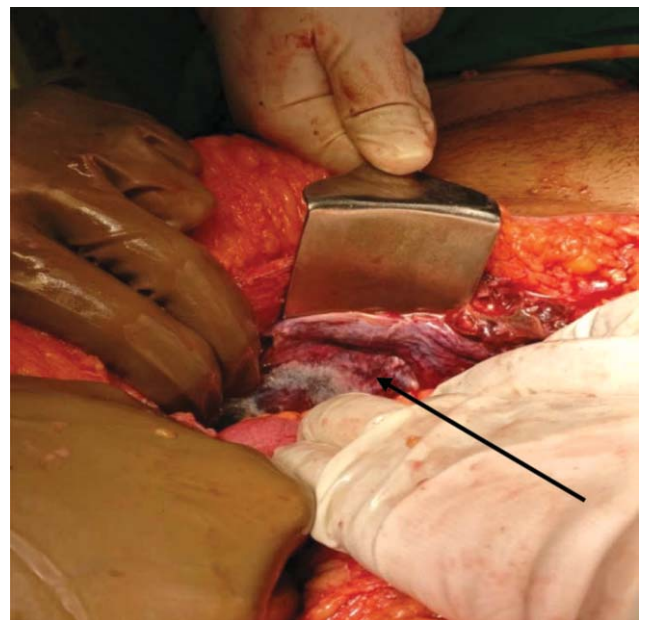
Necrotizing fasciitis progress rapidly with sudden presentation and involvement of deeper tissues and often leads to late or missed diagnosis. A retroperitoneal Necrotizing fasciitis is very rare and limited to case studies; very few cases have been reported in the literature.<sup>1</sup> The mortality rate is up to 70% which means it can lead to serious complications if it is not treated aggressively.<sup>2</sup> It is so rare that, according to Smith Giri et al only four successful cases of retroperitoneal necrotizing fasciitis were reported until 2012.<sup>3</sup> Necrotizing fasciitis of other anatomical sites are easier to identify as compared to retroperitoneal necrotizing fasciitis and, as in this case, a differential diagnosis of retroperitoneal necrotizing fasciitis should be kept in mind while dealing with a case of acute abdomen. Early diagnosis and prompt surgical

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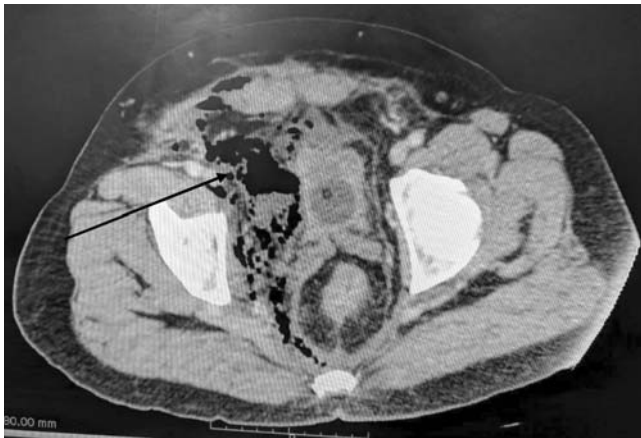
debridement is needed for successful treatment as mortality is very high and late intervention only creates further challenges in the management of the patient.<sup>4</sup> It is characterised by extensive necrosis and tissue oedema, leading to bullae formation on the skin, progressing to cutaneous gangrene. While it can involve any anatomical area of the body, retroperitoneal origin is the most difficult to diagnose.<sup>2</sup> Diagnosis is mostly made clinically but it can only be confirmed by biopsy. There is no reliable imaging technique available to diagnose necrotizing fasciitis of retroperitoneal origin. Most of the time, these cases have previous history of infection or history of trauma that can help in the diagnosis but in our case there was none.

### Case Summary

A 42-year-old male with no known co-morbidities presented in the ER in July 2017 of Liaquat National Hospital on April 16, 2019 with main complaints of absolute constipation and paraumbilical abdominal pain which was moderate in intensity, exacerbated by movements with no relieving factors and radiating to the whole abdomen for the last three days, and episodes of



**Figure-1:** Perioperative findings (arrow) shows necrotizing infection of retroperitoneal area with minimal fluid in peritoneal cavity.



**Figure-2:** Image of CT-Scan showing fluid collection with (arrow) mottled air lucencies in the pelvis on the right side.

bilious vomiting consisting of clear fluid with no food particles since the previous day. He was being managed at a tertiary care hospital elsewhere conservatively for three days. There was no history of trauma.

On examination, his blood pressure was 102/79mm of Hg, and the pulse was 96 beats per minute initially with oxygen saturation of 99%. Abdominal examination revealed distended and tender abdomen more in paraumbilical region with sluggish gut sounds giving impression of small bowel obstruction/perforated appendix. Digital rectal exam (DRE) revealed normal anal tone with empty rectum and mild oedema of both scrotums. There was no significant finding on the rest of the examination.

Lab investigation showed Hb 13.9g/dL (13.5-17.5g/dL), TLC of  $7.5 \times 10^9$  ( $4.0-11 \times 10^9$ ), ALP of 141U/L (<129U/L), Amylase of 20U/L (<100U/L) and Albumin at 2.8g/dL (3.4-4.8g/dL), while blood glucose and rest of the labs were all normal. Chest X-ray was also normal. CT-Scan of the whole abdomen showed multiple specks of air on the right side beneath the anterior abdominal wall, right paracolic gutter, extending into pelvis on the right side representing pneumoperitoneum, and the walls of the appendix were ill-defined with air lucencies and fat streaking in the periappendiceal region which was presumed to be secondary to perforated appendix.

Provisional diagnosis of perforated appendix was made and the patient was immediately taken to the operation theatre and laparotomy was performed. Peri-operative findings included necrotizing infection of retroperitoneal area extending down to the right testicular tissue which was debrided. The appendix looked normal but appendectomy was done. No bowel perforation was

identified and 300cc of purulent fluid in the peritoneal cavity was drained. Corrugated drains were placed in the retroperitoneum and right scrotum. Laparotomy wound was primarily closed. Diagnosis of retroperitoneal necrotizing fasciitis was made intra-operatively, based on the above findings. Appendix and right scrotal tissue was sent for histopathology, which revealed normal appendix and acute suppurative necrotizing inflammation of right scrotal tissue. The tissue and pus was sent for culture and sensitivity. As gastrointestinal pathology was suspected, Meropenem and Flagyl were started, based on the provisional diagnosis but later antibiotics were given according to the culture result which showed *E.coli* and *Bacteroides fragilis* which were sensitive to Piperacilin+Tazobactam and Meropenem, respectively; however, the same antibiotics were continued to cover anaerobic bacteria. The post-operative period was uneventful and the patient was discharged on the 13th postoperative day on daily dressing. He was followed up in the OPD after 13 days with no active complaint. Two days later, on May 17, the patient came back with bleeding from the wound. He was readmitted and the dressing was opened which revealed blood clots but no active bleeding was seen. He was transfused two pints PCVs due to low Haemoglobin and the next day CT-Scan of the whole abdomen was done which showed that the inferior epigastric artery of right side was encased in a collection with active blush due to which Angioembolisation was performed. Dressing was done daily, multiple clots were found but there was no active bleeding. After Angioembolisation his condition improved and haemoglobin normalised; he was discharged again with advice for daily dressing as his seven-day hospital stay was uneventful.

## Discussion

NF is a serious soft tissues infection that comprises extensive necrosis, oedema and thrombosis of microvasculature leading to severe tenderness of the overlying area and the skin forms bullae progressing to cutaneous gangrene.<sup>2</sup> It can occur anywhere in the body but mostly affects extremities, perineum and genitalia.<sup>4</sup> The diagnosis is made on clinical grounds, while creatinine kinase elevated levels can also help with the diagnosis, though only biopsy of the tissue can confirm the diagnosis.<sup>2</sup> The true incidence is hard to evaluate because of the rarity of cases, administrative databases and clinical registries and lack of information regarding origin.<sup>5</sup>

In this case there was no history of trauma or infection, though most of the cases of retroperitoneal necrotizing fasciitis reported in the literature had identifiable sources

of infection or history of trauma.<sup>3</sup> Early diagnosis is a big challenge in treating NF as there is a wide range of symptoms including features of peritonitis<sup>6,7</sup> and features mimicking appendicitis.<sup>8</sup> Because of totally different presentation in this case the diagnosis was delayed, while mostly in literature diagnosis was made intraoperatively as with our case.<sup>3,9</sup>

Other similar cases have been reported by Jayatunga et al in 1993 and Sugimoto et al in 2010.<sup>6,7</sup> In the former, a 74-year-old diabetic woman had retroperitoneal necrotizing fasciitis limited to her pelvis,<sup>6</sup> while in the latter, a 58-year-old hypertensive man had developed extensive necrotizing fasciitis of the retroperitoneum resembling Fournier's gangrene. A post-operative colonoscopy revealed a colonic adenocarcinoma.<sup>7</sup> In the former case, microbiology revealed *E. coli* and *Streptococcus faecalis* sensitive to Vancomycin and Ceftazidime,<sup>6</sup> but in the latter case reported by Sugimoto et al, *Streptococcus anginosus* was isolated.<sup>7</sup> In our case *E. coli* and *Bacteroides fragilis* was isolated that was sensitive to Piperacilin+Tazobactam and Meropenem, respectively and so the antibiotics were changed according to cultures; however, cover for anaerobic bacteria was continued. Both of the afore-mentioned cases had unclear aetiology and both the patients survived following extensive debridement of the necrotic tissues and supportive care similar to the progress of our case.

Successful treatment of NF requires early extensive debridement with appropriate broad spectrum antibiotic therapy to cover a wide range of potential microorganisms. At first, it affects the perirectal area and then spreads to retroperitoneal soft tissue planes with extensive necrosis and involvement of subcutaneous tissues giving characteristics of NF. This late manifestation results in delayed surgical intervention, by which time curative resection is not feasible.<sup>9</sup> Still there is no investigation for early diagnosis of retroperitoneal NF.<sup>9</sup> According to Wysoki, CT findings of asymmetric fascial thickening and gas are valuable in assessing suspected necrotizing fasciitis.<sup>10</sup> CT scan can be the best investigation of choice but there is no imaging technique that will improve the prognosis, though early usage of antibiotic therapy can help reduce the tissue destruction.<sup>9</sup>

Retroperitoneal NF is associated with high mortality rate with very few cases reporting survival.<sup>6,8</sup> Early diagnosis, extensive debridement, appropriate antibiotic therapy,

good nursing care with nutritional support contribute to good prognosis and uneventful postoperative period.

## Conclusion

Extensive necrosis of retroperitoneum should also be included in differential diagnosis in patients presenting with symptoms of acute abdomen. As of now there is no way of early diagnosis of a retroperitoneal NF, but findings on clinical grounds or imaging studies can help in diagnosis and with surgical intervention and appropriate antibiotics can highly impact the prognosis and survival of the patient.

**Consent:** Written informed consent was obtained from the patient for publication of this case report and any accompanying images. The consent of the patient/guardian was taken prior to the writing of the manuscript.

**Disclaimer:** The abstract has not been presented or published in a conference, or published in an abstract book.

**Conflict of Interests:** None to declare.

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