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Retroperitoneal Abscess with Extra-Abdominal Presentations - A Case Series

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Abstract

Introduction: Retroperitoneal abscesses are conditions which have insidious developments, with symptoms occurring towards the latter phase of the illness. Interestingly they may present with a lack of abdominal signs, and in many cases become apparent once there is an extra-abdominal manifestation. Patients may report referred pain to the lower limb, painful swellings in the groin, or there may be evidence of subcutaneous emphysema on clinical examination.

Materials & Methods: Case reports of the patients who had presented in the emergency department of NRI Medical College & General Hospital. Diagnosis was made based on Radiological and Intra-operative findings.

Conclusion: Retroperitoneal abscesses may be classified as primary if the infection results from hematogenous spread or secondary if it is related to an infection in an adjacent organ. Most retroperitoneal abscesses originate as inflammatory processes in the kidney and GI tract.

Keywords: Retroperitoneal Abscess, Various Presentations, Investigations and Diagnosis, Management.

Introduction

Retroperitoneal abscess is an uncommon type of infection. Its insidious, nonspecific clinical presentation due to a lack of peritoneal signs can lead to mortality due to misdiagnosis [1] .It mostly occurs in people aged 30–50 years, with a slight male predominance [2] .Abscesses developing within the retroperitoneal spaces are serious surgical infections which are associated with prolonged morbidity and high mortality unless diagnosed early and treated adequately [3].

The source of infection may be primary or secondary. Primary infection is haematologically disseminated and usually located in the muscle or spine.Secondary infection, by contrast, is involved with the infection from organs within the space. Pyelonephritis secondary to genito-urinary (GU) infection was found to be the most common etiology of retroperitoneal abscess, followed by gastroenterology (gastrointestinal; GI) infection

(diverticulitis, retroperitoneal appendicitis, pancreatitis, biliary, and peptic ulcer diseases) [1].

Retroperitoneal space is divided into three distinct compartments: the anterior pararenal, perirenal, and posterior pararenal spaces. The anterior pararenal space mainly contains digestive organs, including the ascending and descending colon, pancreas, and retroperitoneal part of the duodenum. The perirenal space contains the kidneys, adrenal glands, aorta, and inferior vena cava [4].

The posterior pararenal space contains fat, with the spine and quadratus lumborum muscles located posteriorly. The space is closed superiorly in the diaphragm but is open to the pelvis and thighs, which causes abscesses to extend bilaterally and inferiorly [4].

The mortality of retroperitoneal abscesses depends on the patient's comorbidities. The mortality rate was reported to be 26% in a series in 1987 [5] and 1.5% in a series in 2003[3].

Methods

Case reports of the patients who had presented in the emergency department of NRI Medical College & General Hospital.

To document the various presentations of retroperitoneal abscess.

Diagnosis is made based on the radiological investigations.

Case Reports

Case 1: A 45 year old male presented with pain in the lower abdomen since 4 days and swelling in the right side of scrotum since 2days. An episode of fever present 1week back, which subsided on medication .H/o burning micturition present .On clinical examination, abdomen appears tense & distended with swelling on the right side of inguino-scrotal region. Tenderness present over right iliac fossa and hypogastric region and radiating to right side of scrotum. Testis not palpable on right side.

U/S scrotum showing few air foci in right side of scrotum and anterior to the spermatic cord tracking into abdomen. X-ray erect abdomen with scrotum showing air tracking from right side of scrotum into abdomen. CT abdomen showing multiple air foci involving scrotum, perineum, anterior abdominal muscles and retro peritoneum.

Incision and drainage was done with high orchidectomy in view of necrosed testis.

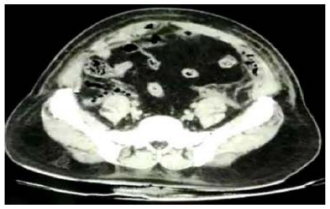

Fig 1 & 2 : CT Abdomen showing air foci in scrotum and and Retroperitoneum

Fig 3& 4: Showing intraoperative pictures of right sided pyocele and Retroperitoneal extension of pus

Case 2

A 58years old male presented with swelling in the right gluteal region since 1week associated with pain .H/o anuria for 3 days followed by frequent passing of urine for about 2 to 3 times per day.On clinical examination Induration of size 10*10 cms present in right gluteal region , local rise of temperature and tenderness present.P/A tenderness present in the lower abdomen with guarding .

MRI pelvis showing illdefined collection with multiple air foci in right gluteal region extending into retropeitoneum .

Incision and drainage of gluteal abscess with retroperitoneal drain.

Fig 5 & 6 : MRI pelvis showing ill-defined collection in the right gluteal region

Case 3

A 64years male presented with pain abdomen and distension since 3 days. Associated with vomitings since 3 days of about 5–6 episodes per day containing food particles .H/o fever with chills present since 3 days associated with not passing stools and flatus .Per abdomen- distension present with lower abdomen tenderness and guarding.

CT showing free extraperitoneal air pockets noted posterior to rectus abdominus muscle on both sides and extending from lower chest to pelvis and retroperitoneum.

Incision and drainage was done with drain at right lumbar region.

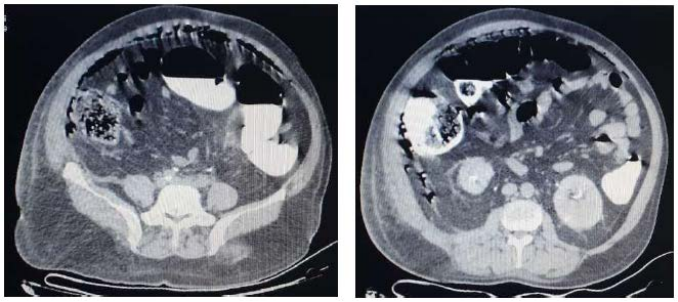

Fig 7 & 8 : CT Abdomen showing air foci in anterior abdominal wall and retroperitoneum

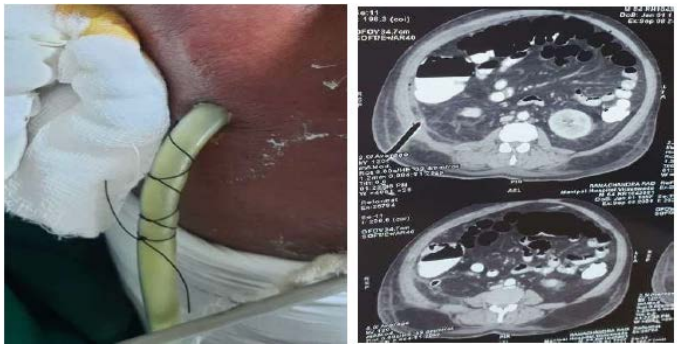

Fig 9 & 10 : Clinical picture of drain placement and CT Abdomen showing reduction in pneumoretroperitoneum

Case 4

A 70 years old female with complaints pain in the left thigh since 3 weeks associated with recent onset of swelling. H/o low back ache sine 2 weeks on and off attacks . On examination diffuse swelling of left thigh present associated with mild local rise of temperature.

CT showing extensive gas distribution throughout the soft tissue of thigh , left renal fossa and along left psoas and iliacus muscle .

Incision was given and drain was kept.

Fig 11: CT Abdomen showing air foci at left Perinephric region

Case 5

A 60 years old female came with complaints of back pain since 2 years . H/o recent increase in pain since 15 days. Associated with significant weight loss and loss of

appetite. On local examination tenderness at lower lumbar vertebrae with tenderness on right loin region.

MRI LS spine revealed degenerative changes in L4-L5 vertebrae with localized abscess collection in retroperitoneal region on right side.

Incision was given and drain was kept.

Fig 12 & 13: Ultrasound showing drain in the abscess cavity and resolution of abscess

Table 1: Demographic distribution and approach of various cases

	Case 1	Case 2	Case 3	Case 4	Case 5
AGE (YEARS)	45	58	64	70	60
SEX(M/F)	M	M	M	F	F
CHIEF COMPLAINTS	Lower abdominal pain and Right scrotal swelling	Swelling in the Right gluteal region and Aneuria	Pain abdomen , distension and vomiting	Pain and swelling in the Left thigh and backache	Back pain and loss of appetite
PAST HISTORY	---	Diabetic	Diabetic	Diabetic and CAD	Diabetic
EXAMINATION FINDINGS	Abdomen in tense and Right inguino-scrotal region swelling	Swelling in Right gluteal region with local rise and tenderness plus lower abdomen guarding and tenderness	Distension of abdomen with lower abdomen tenderness and guarding	Diffuse swelling of left thigh with mild local rise of temperature	Mild tenderness at L3-L5 region with right loin tenderness
INVESTIGATIONS	USG and CT showed multiple air foci in scrotum and retroperitoneum	MRI pelvis showed ill defined collection at Right gluteal region extending into Retroperitoneum	CT showed few extraperitoneal air pockets posterior to rectus and in retroperitoneum	CT showed air foci il left thigh , left renal fossa and along left psoas and iliacus	MRI LS spine revealed abscess in retroperitoneal region on right side
MANAGEMENT	Incision and drainage with Right sided high Orchidectomy	Incision and drainage with Retroperitoneal drain	Incision and drainage with drain in the Right lumbar region	Incision and drainage with drain on left psoas area	Drain was placed under USG guidance

Discussion

The extra peritoneal portion of the abdomen has always been considered a difficult region in terms of anatomic definitions, clinical evaluation, and radiologic diagnosis [6]. Anatomically, it has been vaguely considered as occupying the posterior half of the abdomen, without well-defined fascial boundaries. Clinically, it is commonly recognized that extra peritoneal effusions are difficult to diagnose. The area is not accessible to the bedside modalities of auscultation, palpation, or percussion. Symptoms and signs may be obscure, delayed, nonspecific, or misleading [6] , often they lack abdominal signs , leading to delay in drainage and high mortality rate [11] . Extraperitoneal tissues do not react as acutely and severely to bacterial contamination as does the peritoneal cavity [7] .

Altemeier and Alexander , described the extraperitoneal compartments above the pelvic brim. They divided the retroperitoneum into retrofascial and anterior and the anatomy of the extraperitoneal pelvis into posterior, anterior, inferior, and superior spaces. More recent reviews by Meyers [9] and Simons et al. [10] provide more complete anatomic, functional, and radiologic descriptions.

A simplified classification consisting of five components was developed [4]: (1) perinephric, (2) upper retroperitoneal (i.e., above the pelvic brim), (3) pelvic, (4) combined upper retroperitoneal and pelvic, and (5) localized musculoskeletal (e.g., confined to the iliacus, psoas, or gluteus muscles) .

The clinical manifestation of retroperitoneal abscesses is undistinguished, with common presentations of fever and pain [3,5] . Therefore, initial misdiagnosis or delayed diagnosis is common. In our case series, fever, back pain, and abdominal pain were common presentations. Nevertheless, back pain was much more common in patients whose abscess was of GU or spinal origin and less common in cases of GI origin [5] . Radiculopathy,

which was frequently described as limb numbness, was only present in cases of spinal origin [1] .

In our case series , all the patients are elderly with age being above 45 years with slight male predominance , in accordance with the previous study by L.F.Harris , J.E.Sparks et.al [2].

Diabetes mellitus, malignancy, an immunocompromised condition, and related urological and gastrointestinal procedures or operations are known predisposing factors [12].

The pathogen of the retroperitoneal abscess may vary depending on the origin of the infection. Polymicrobial infections with aerobic and anaerobic bacteria were noted commonly in cases of GI origin [13], and E. coli was the most common pathogen overall, followed by K. pneumoniae in our case series. Mycobacteria was found to be the most common pathogen in abscesses originating from the spine, which was consistent with other series [15] .

Previous studies of the microbiology of retroperitoneal abscesses were limited to infection of only one space [14] ,in relation to genitourinary system E.coli and Proteus spp were common pathogens [16] .

In our study, patients presented to emergency department and most of them are presented with extra-abdominal symptoms. On thorough examination and investigations, retroperitoneal abscess was diagnosed.

The diagnostic sensitivity of radiographs (including plain abdomen; kidney, ureter, bladder; thoracic or lumbar spine) in other series ranged from 38% to 90% and range from 67% to 84% in ultrasonography [17] . CT is reliable for the diagnosis of retroperitoneal abscess, with a sensitivity ranging from 90% to 100% [18] . Although other series did not use MRI for evaluation, the value of MRI cannot be underestimated, especially in the abscesses originating from spinal origin for its clear vision of paraspinal soft tissues [19] .

Interventional treatment such as image-guided drainage or surgery was the mainstream treatment method along with antibiotics treatment in our case series. Even multiloculated abscesses can be treated with multiple drainage tubes or septal perforation with catheter placement [20] .

Surgical drainage was performed commonly for abscesses of GI origin for repair of the intestine if a perforation was found. Treatment of retroperitoneal abscesses originating from the spine is varied [15 , 23]. Small and uncomplicated abscesses can be treated with medication alone [21]. For large abscesses, both percutaneous and surgical drainage were performed, but the timing of spinal fusion was related to the stability of the spine and the neurological manifestation [22 , 23] .

The mortality of retroperitoneal abscesses depends on the patient's comorbidities. The mortality rate was reported to be 26% in a series in 1987 [5] and 1.5% in a series in 2003 [3]. A positive blood culture was associated with a higher mortality [3, 5].

Conclusion

The etiology of retroperitoneal abscess is varied and depends on the source of infection. The clinical manifestation of retroperitoneal abscess is insidious, and patients usually present with fever, abdominal pain, and flank pain.

Treatment for retroperitoneal abscess varies according to the origin. Surgical drainage is recommended in cases of GI origin. Percutaneous drainage is recommended initially in cases of GU origin, deep muscular and soft-tissue origin, with a risk following surgical drainage due to incomplete drainage. Retroperitoneal abscesses of

spinal origin should be treated under consideration of the structural stability and clinical manifestation.

E. coli was the most frequent pathogen in the retroperitoneal abscess cases. K. pneumoniae was also found to be a common pathogen in the retroperitoneal abscess patients, especially in perinephric abscesses.

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