Renal, colonic and retroperitoneal Actinomycosis - A case report

***Anand L. Gidwani[1], David Connolly[1], Azmat Khan[1], Robert Kemohan[1], Malcolm Brown[2] and Brian Kenny[2]**

[1]Department of General Surgery and Urology, Causeway Hospitals Trust Coleraine, Northern Ireland. 12 Lynda Meadows, Jordanstown, Newtownabbey, Co Antrim, Northern Ireland, United Kingdom.

[2]Department of Histopathology, United Hospital Trust, Antrim, Northern Ireland,

E-mail: gidwanianand@hotmail.com

Summary

An unusual case of actinomycosis involving the kidney, retroperitoneum and colon is reported. A 41 year old patient with two weeks history of loin pain was found to have a palpable renal mass on clinical examination. Imaging revealed a solid mass arising from the left kidney, invading the retroperitoneum suggestive of an invasive hypernephroma. A nephrectomy, partial resection of psoas and colonic resection with end to end anastomosis was performed. Histopathology revealed renal actinomycosis with involvement of the adjacent colon and retroperitoneum. He recovered well after surgery and was treated with penicillin for one year. Five years have elapsed since presentation without any evidence of clinical recurrence. Abdominal actinomycosis though rare, should be borne in mind while investigating patients presenting with an abdominal mass.

Key-words: *Actinomycosis, Renal, Colonic, Retroperitoneal, Cure*

Résumé

Il s'agit d'un rapport sur un cas peu ordinaire d'une actinomycose impliquant le rein, retropéritoine et le côlon. Un patient agé de 41 ans avec l'histoire de la douleur du reins d'une durée de deux semainese était noté d'avoir une masse rénale palpable au cours d'un examen clinique. L'imageur avait indiqué une masse complète venant de rein du côté gauche, qui a envahi la retropéritoine évocateur d'une hypernephrome complet. La nephrectomie, ablation chirurgicale partielle, du psoas et ablation chrurgicale colonique avec bout à bout anastomose a été opérée. L'histopathologie avait indiqué une actinomycose rènale impliquant le côlon attenant et retropèritoine. Il est tout à fait remis apres l'intevention chirurgicale et traité avec la pénicilline pendant une année. Il y a cinq ans depuis présentation sans aucune preuve de la récurrence clinique. On doit se souvenir de la actionomycose, quoique rare, pendant que l'on soigne des patients atteints de la masse abdominale.

Introduction

Actinomycosis is a bacterial infection that can affect virtually any site in the body. Oral and cervicofacial lesions are the most common sites but due to its rarity, recognition of this disease is uncommon. Renal involvement though extremely rare, can occur as a result of haematogenous dissemination from a cryptic or a defined non-contiguous source. Renal involvement may also occur by a direct extension from within the peritoneum or thorax.

Renal actinomycosis is difficult to diagnose both clinically and at radiology. It is mostly demonstrated at histopathology[1]. Despite the advent of efficacious antimicrobial therapy, surgery is often performed because the disease cannot be diagnosed with other modalities. Since the prognosis is good, this pathology should be considered as a differential diagnosis while investigating a renal mass.

Case report

A 41-year-old man presented with pain in the left loin of two weeks duration. On examination there was tenderness in the left loin with a palpable mass suggestive of an enlarged left kidney. Laboratory findings revealed mildy raised inflammatory markers and analysis of urine was normal. Plain

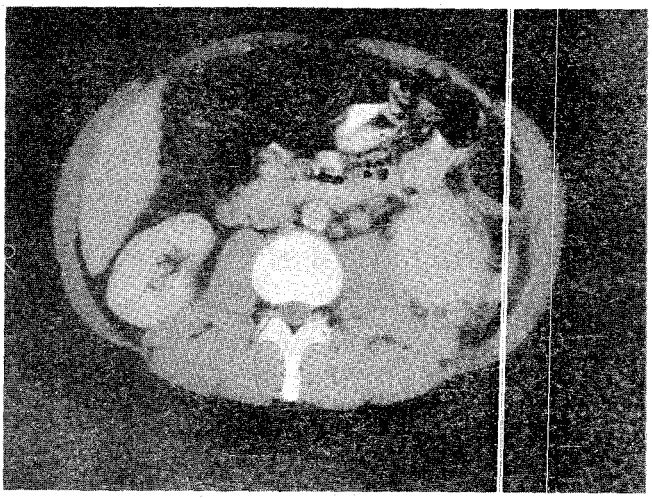

Fig. 1 *Normal right kidney; stranding of perirenal fat and thickening of adjacent descending colon on the left side; expanded left kidney with loss of parenchymal appearance; invasion of left psoas muscle and enlarged paraortic lymph nodes.*

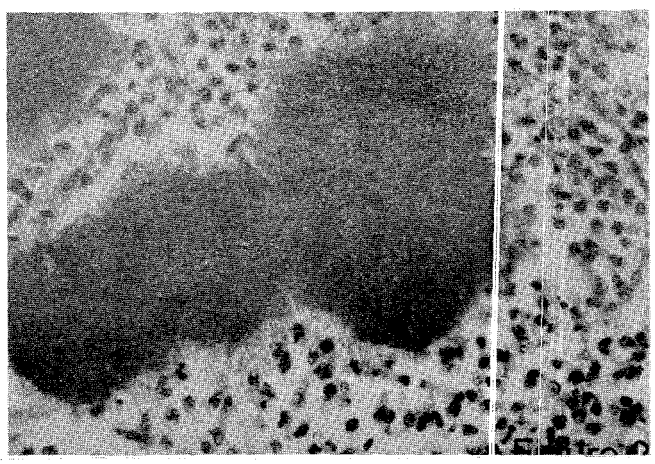

Fig. 2 *The section shows a dense infiltrate of pus cells, in the centre of which there is a colony of actinomyces (sulphur granule).*

x-ray of the chest was reported within normal limits. Abdominal ultrasonography revealed a solid mass in the lower pole of the left kidney. A neoplasm was suspected and computer tomography (CT) scan revealed a large mass consistent with a "large locally advanced left hypernephroma, with invasion of the left psoas and descending colon" (Fig. 1).

At laparotomy, an en-bloc resection of the left kidney, partial excision of the adherent psoas muscle and segmental colonic resection with end to end anastomosis was performed. Histopathology revealed actinomycotic renal carbuncle with fibrosis and abscesses involving the perinephric tissues (Fig. 2). A small actinomycotic abscess was found in the submucosa of the adherent colon.

Ten days after surgery, the patient was readmitted with upper abdominal pain and vomiting, suggestive of small bowel obstruction. A gastrograffin study was performed which revealed hold up in the proximal jejunum. At laparotomy adhesions between the jejunum, renal bed and colonic anastomosis were noted. All adhesions were lysed and the adherent loop of small bowel was resected with an end-to-end anastomosis. The colonic anastomosis was refashioned.

Histopathology of the jejunal specimen revealed serosal adhesions while that of the colonic anastomotic rings revealed colonies of actinomycosis. Post-operative recovery was satisfactory and the patient was commenced on penicillin, which he received for one year. He had regular follow up over five years, during which time he remained asymptomatic.

Discussion

Actinomycosis is most commonly caused by Actinomycosis israelii, though many other species have been recognised. It is a gram-positive anaerobe and often lies in the carious cervices of teeth or in the deep crypts of the tonsil[2]. Infection can occur at all ages; the peak incidence is reported to be in the mid-decades (20–60 years)[3]. The disease is more common in men and there is no seasonal or occupational predilection[4]. Actinomycosis israelii acts as an opportunistic infection, usually in association with bacterial infection and tends to follow a break in the normal mucosal barriers[4]. The overall incidence for actinomyces has undoubtedly diminished since the pre-antibiotic era when this disease was not only common but also behaved in a more malignant way. The tissue reaction caused by actinomycotic infection results in formation of a mass of hard fibrous tissue, almost avascular, and on section looks very much like a sarcoma or a schirrous carcinoma[2].

It has been called "the most misdiagnosed disease" and there is no disease, which is so often missed by experienced clinicians[2]. The disease though best recognised in the oral and cervicofacial areas, has been reported in other sites including the abdomen, chest, central nervous system and musculoskeletal system[2].

All levels of the urogenital tract can be infected by actinomycosis. Renal involvement manifests as pyelonephritis, renal carbuncle, perinephric abscess or renal mass. Primary actinomycosis of the retroperitoneum has been described but the majority of these cases are thought to be due to secondary spread from a cryptic or obscured abdominal source[5]. Involvement of the gastrointestinal tract is usually secondary to a breach in the mucosa. In this present case, the origin of actinomycotic infection is not clear, but both clinical and pathological diagnosis favoured a primary renal involvement with secondary spread to the colon.

Associated symptoms in abdominal actinomycosis are usually non-specific. While pain and fever are the most common symptoms, a palpable mass and formation of fistulae are the most commonly encountered physical findings[4]. When renal involvement occurs, haematuria and pyuria are often present, unlike in our case. Also, Actinomyces species can be successfully detected in the urine if appropriate stains and anaerobic cultures are utilised[6]. Retroperitoneal or bowel involvement usually presents either as an abscess or a firm-to-hard mass, which is often fixed to the underlying tissues and mistaken for a tumour. Sinus tracts to the abdominal wall or perianal region may develop mimicking Crohn's disease.

At CT scan, actinomycotic lesions appear as solid masses with focal areas of low attenuation or as cystic masses with thick enhancing walls[7]. The role of ultrasound-guided aspiration followed by appropriate staining therefore avoiding a nephrectomy, has been highlighted in the past[8]. Horina et al have recently reported the role of T1- and T2-weighted magnetic resonance imaging for the diagnosis of renal actinomycosis[9]. The bacteriological identification of actinomycosis from the sulphur granules or from a sterile site confirms the diagnosis. Periodic acid-Schiff and Grocott-Gomori methenamine tests are specific for actinomycosis. Penicillin is the antibiotic of choice. The two principles with this therapy, which have been accepted over the past fifty years, include: "high doses of antibiotics" for "prolonged period of time"[2]. Penicillin should be given in large doses, 100,000 to 200,000 units per day for 10 to 14 days. After several weeks rest repeated courses of the treatment to be instituted over 12 months, or at any time of recurrence[2].

Abdominal actinomycosis is perhaps the greatest challenge. This infection is rarely considered before the clinical laboratory or pathology establishes its diagnosis, as in this case. Given the favourable prognosis of this infection, actinomycosis should be borne in mind while investigating patients with both acute and chronic abdominal pathology. Modern imaging techniques like ultrasonography, computerised tomography (CT), and magnetic resonance imaging (MRI) should be used in the differential diagnosis of an abdominal mass, to exclude the possibility of abdominal actinomycosis in certain abdominal conditions.

References

1. Fujita Y, Hirata Y and Hoshino T et al. A case of renal actinomycosis. Japanese Journal of Urology 1999; 90: 843-6.

2. Cope Z. Visceral actinomycosis. Br Med J 1949; 1311-6.

3. Pulverer G, Schutt-Gerowitt H and Schaal K P. Human cervicofacial actinomycosis: microbiological data for 1997 cases. Clin Infect Dis 2003; 37: 490-7.

4. Weese W C and Smith I M. A study of 57 cases of Actinomycosis over a 36-year period. A diagnostic 'failure' with good prognosis after treatment. Arch Intern Med 1975; 135: 1562-8.

5. Olson M C, Demos T C and Tamayo J P. Actinomycosis of the retroperitoneum and an extremity: CT features. Abdom Imaging 1993; 18: 295-7.

6. Wajszezuk C P, Logan T F and Pasculle A W et al. Intra-abdominal actinomycosis presenting with sulphur granules in urine. Am J Med 1984; 77:1126-8.

7. Hovarth K, Porkolab Z and Palko A. Primary renal and retroperitoneal actinomycosis. Eur. Radiol 2000; 10: 287-9.

8. Hyldgaard-Jensen J, Sandstrom H R and Pedersen JF. Ultrasound diagnosis and guided biopsy in renal actinomycosis. Br J Radiol 1999; 72: 510-2.

9. Horino T, Yamanoto M, Morita M, Takao T, Yamamoto Y and Geshi T. Renal actinomycosis mimicking renal tumor: case report. South Med J 2004; 97: 316-8.