METASTATIC CERVICAL CARCINOMA PRESENTING AS PSOAS ABSCESS AND OSTEOBLASTIC AND LYTIC BONY METASTASES

J George, F M Lai

ABSTRACT

A 60-year-old Chinese lady presented with a left flank mass and weight loss. Plain films showed a sclerotic L1 vertebral body, osteopenic L2 and L3 vertebral bodies and loss of left psoas outline. However initially unrevealed history of previous carcinoma of the cervix caused confusion as to the aetiology of a sclerotic vertebrl body associated with an left flank collection. Psoas abscess with adjacent bony osteomyelitis was initially suspected. The left flank mass turned out to be an infected necrotic large metastatic lymph node compressing the lower pole of the left kidney. The sclerotic and osteopenic vertebral bodies represented an unusual presentation of bony cervical carcinoma metastases.

Keywords: *carcinoma of the cervix, osteoblastic and lytic bony metastases, psoas abscess.*

SINGAPORE MED J 1995; Vol 36: 224-227

CASE REPORT

A 60-year-old Chinese lady was referred to University Hospital with a complaint of chronic backache which had progressively worsened over a period of 7 months. This was associated with left lower limb paresis and paraesthesia as well as significant weight loss. Initially she gave no history of previous malignancy. No contact with a tuberculosis patient was evident.

On examination she was found to be afebrile, cachectic and was not able to stand. Her left hip was held in flexion. The movement of the spine was grossly limited by pain and a kyphosis was noted at T12/L1 level. Her motor power of the left lower limb was grade 3-4 and there was associated paraesthesia of L2 dermatome and below.

A vague abdominal mass was palpated in the left flank and vaginal examination revealed an obliterated upper vaginal fornix.

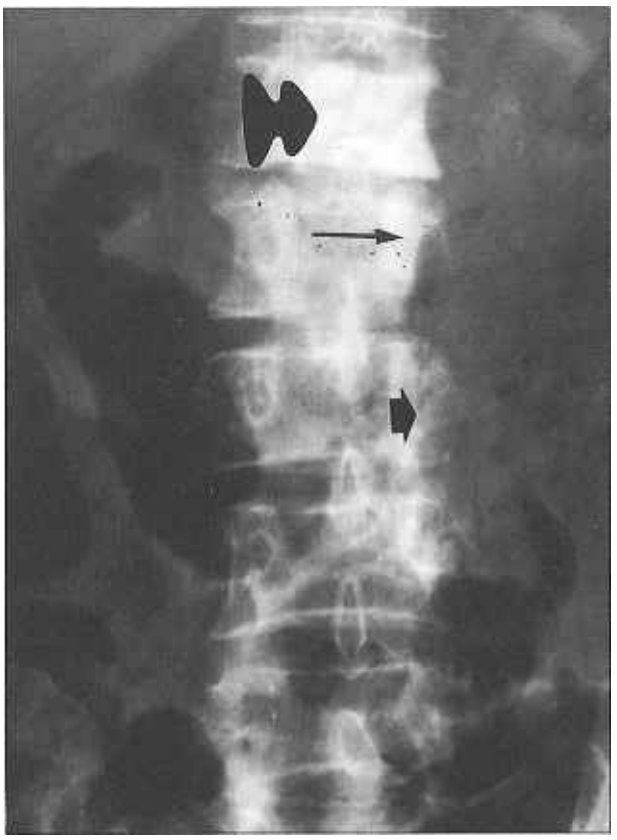
Blood profile found her to be anaemic with a haemoglobin level of 8.1g%. The total white count was 24,600 mm, with 88% polymorphs. The erythrocyte sedimentation rate was 35mm/hr.

Biochemical investigations done were essentially normal. Repeated sputum smears for acid fast bacilli were negative.

Her chest radiograph was normal. Radiographs of the thoraco-lumbar spine (antero-posterior and lateral views) revealed a sclerotic body (Fig 1 and 2) of the 1st lumbar vertebrae with minimal anterior wedging. The adjacent disc spaces were not narrowed. The bodies of the 2nd and 3rd lumbar vertebrae showed permeative bony destruction with erosive changes of the end plate of L2. The L2/3 and L3/4 disc spaces were narrowed. The rest of the spine showed general osteoporosis with degenerative changes.

The right psoas margin was well seen on the abdominal radiograph but the left was not visualised.

Fig 1 – Anterior-posterior radiograph of lumbar spine showing sclerotic L1 vertebra (broad arrow), sclerotic left pedicle of L2 (long arrow) and erosion of left lateral margins of L2 and L3 vertebral bodies (short arrow).



Ultrasound (U/S) examination of the abdomen revealed a large mass on the left side involving the psoas. The mass was mainly cystic with solid encapsulating walls. The pancreas was displaced anteriorly by the mass. The liver and right kidney appeared normal but the left kidney was not visualised.

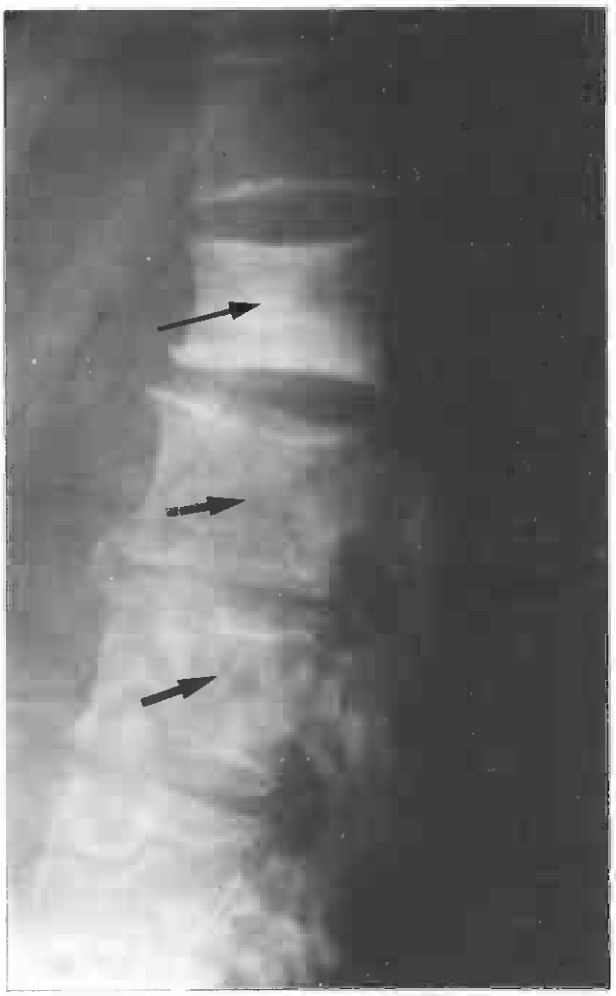
Department of Radiology
University Hospital
55100 Kuala Lumpur
Malaysia

J George, MBBS, DMRD (Aberdeen), FRCR (Lond)
Lecturer

F M Lai, MBBS
Medical Officer

Correspondence to : Dr J George

Fig 2 – Lateral radiograph of lumbar spine showing sclerotic L1 vertebral body with loss of height (long arrow) and lytic lesions in bodies L2 and L3 vertebrae (short arrow).



Magnetic resonance imaging (MRI) was performed at a nearby private hospital. Coronal, done with a repetition time (TR) = 700 msec and echo time (TE) = 25 msec (Fig 3), axial (TR= 800 msec; TE= 25msec) (Fig 4) and sagittal (TR= 800msec; TE= 25msec) sections of the MRI images done without intravenous contrast medium were reviewed. The left psoas muscle appeared enlarged with a paraspinal encapsulated fluid collection extending from the level of T12/L1 disc space into the pelvis. On axial slices the mass extended towards the midline, displacing the pancreas anteriorly. This mass had a signal intensity higher than the contralateral normal psoas muscle, with large areas of lower signal intensity in the centre on T1 weighted images.

There was marked decrease in the signal intensity of the body of L1 vertebrae in keeping with sclerosis. The bodies of L2 and L3 too were of lower signals especially in the areas adjacent to the paraspinal mass. The cortical margins of L2 and L3 vertebral bodies adjacent to the mass were ill defined. The posterior elements and adjacent disc spaces were preserved and had normal signal intensities.

No abnormality was detected in the limited sections of the liver, spleen and right kidney. The left kidney was noted to be displaced laterally and hydronephrotic and the lower pole continous with the left flank mass.

In view of the finding of this left paraspinal mass a computed tomogram (CT) guided aspiration was carried out. Pus-like

Fig 3 – T1 weighted coronal section through the abdomen. The large necrotic node mimicking psoas mass (broad arrow) is seen displacing a hydronephrotic left kidney (open arrow). Abnormal low signal of upper three lumbar vertebral bodies is noted (short arrows) in keeping with metastases.

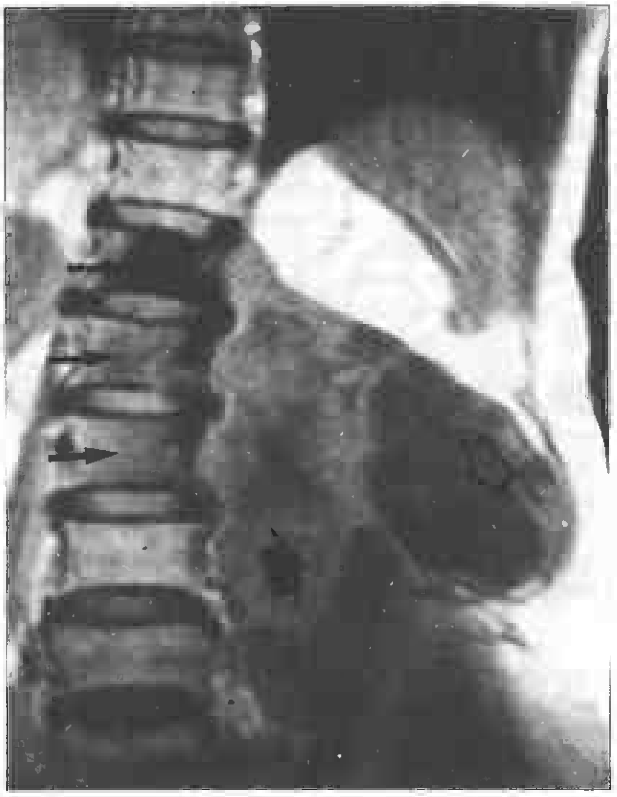
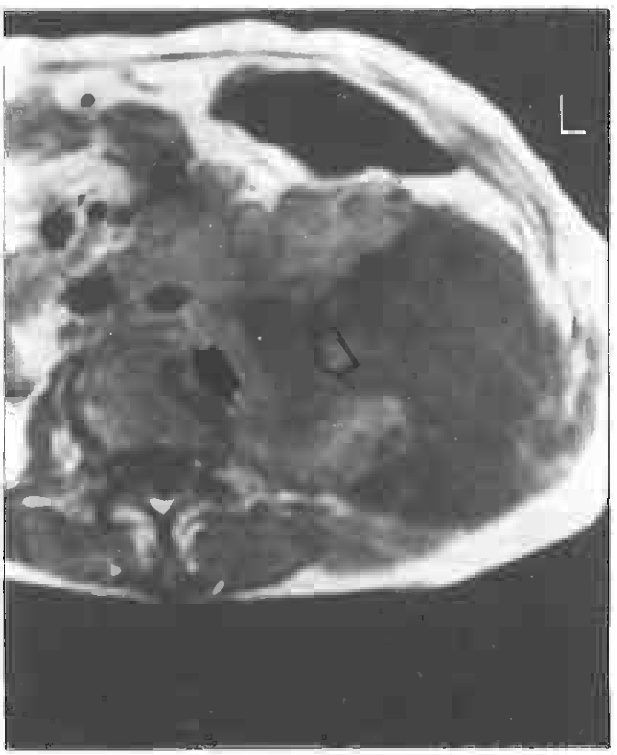


Fig 4 - Axial T1 weighted section at 2nd lumbar vertebral level. This shows the large left psoas mass (open arrow) with erosion and sclerosis of adjacent cortex of the vertebral body (closed arrow).



material was obtained and sent for bacteriological culture and histological examination.

The CT sections at time of aspiration revealed a dense L1 and a large left paraspinal mass. The mass was of mixed attenuation with a large central area of low attenuation and a peripheral rim of sot tissue attenuation. No evidence of gas was noted within this mass.

The results of the culture were negative with no acid fast bacilli noted. Histology revealed inflammatory cells and degenerated cell with high nucleo-cytoplasmic ratio and hyperchromatic nuclei. These findings were consistent with an abscess with underlying evidence of malignancy but no specific histology.

As the nature and origin of this malignancy was not clear and the fact that the lower aspect of the left kidney was continuous with the left paraspinal mass, left renal arteriography was requested to exclude cystadenocarcinoma arising from the lower pole of the left kidney.

The left renal artery was not opacified in the initial flush abdominal aortogram. A selective left renal arteriography was then performed and it revealed a small left renal artery. The left kidney was also small with markedly thinned cortical tissue but otherwise showed no abnormal tumour circulation. Collateral vessels were noted superior to the upper pole of the left kidney in the venous phase which suggested obstruction to the left renal vein. An abdominal radiograph done on completion of the angiographic study showed no excretion of contrast medium from the left kidney.

Just prior to operative incisional drainage of the psoas abscess, the patient confessed to a history of having carcinoma of the cervix 8 years previously. She handed in a previous medical report indicating she had stage IIb cancer and was treated with radiotherapy in a private hospital at that time. Incision and drainage was carried out under general anaesthesia. A large abscess extending from the vertebral body to the anterior abdominal wall and into the pelvis was noted intraoperatively. This contained 200cc of straw coloured fluid with necrotic tissue. The necrotic tissue and abscess wall were sent for histopathological examination which revealed chronic inflammatory cells and malignant squamous cells with abnormal mitosis. These were consistent with metastatic squamous cell carcinoma from carcinoma of the cervix. Operative findings revealed direct invasion of the first three lumbar vertebral bodies by tumour tissue.

DISCUSSION

Back pain, weight loss and psoas spasm which were the main symptoms of this patient were among the typical presenting features of psoas abscess noted by Williams[1]. Other features were intermittent fever and general malaise. In the same series, anaemia was common at presentation. The white cell count and erythrocyte sedimentation rate were frequently raised. Plain radiographs may reveal an enlarged psoas muscle with gas shadows and obliteration of the psoas outline.

Ultrasound, although being a simple, noninvasive and relatively inexpensive examination to perform, has several limitations in the study of the retroperitoneum. The psoas muscles may be difficult to identify sonographically because of the overlying gaseous bowel, and the iliacus muscles were even more difficult to examine. Even under optimal conditions, it may provide only limited information about the extent of disease[2].

In this patient, the next mode of imaging was MRI. The advantages of MRI are the ability to obtain images in three different planes and its excellent contrast resolution using multiple pulse sequences. The disadvantages are the high cost and its long scanning time though this is decreasing with newer protocols. On MR imaging, the muscles of the retroperitoneum have low signal intensity due to their relatively long T1 and short T2 relaxation time. Abscess frequently appeared as regions of increased signal intensity on both T1 and T2 weighted images[2] as in this patient. This is however nonspecific as metastases and haematoma involving the psoas muscle also had high signal intensity on both T1 and T2 weighted images. Not surprisingly, MR imaging was not found to be capable of providing a specific histologic diagnosis [3].

Differentiation between abscess, tumour and haematoma based on CT appearances alone was also unrewarding. Although only limited CT sections were done during the CT guided aspiration, the enlarged psoas muscle with centrally located areas of decreased attenuation were the common features regardless of the aetiology [4].

The second diagnostic problem was to determine the cause of the psoas abscess. Tuberculosis is a prominent cause of abscess in the psoas compartment especially in this part of the world and therefore needs to be ruled out. The majority of the non tuberculous psoas abscesses are secondary to identifiable causes. These include intestinal disorders (Crohn's disease, diverticulitis, appendicitis, colorectal carcinoma), osteomyelitis of the spine, post-operative pancreatic and perinephric abscesses [5]. Metastases from renal, adrenal, colon, cervix and prostate are among some of the carcinomas that are known to involve the psoas compartment [3]. These tumours may subsequently be complicated by haemorrhage and infection resulting in abscess formation [4].

The typical plain radiographic appearance of vertebral osteomyelitis are loss of definition of the end plate margins and narrowing of intervertebral disc space [6]. Both features were not present in the plain radiographs of this patient. Spinal tuberculosis however has a tendency to spare the vertebral interspace, which is maintained longer than in the pyogenic infection. This may cause difficulty in determining multivertebral body involvement as being caused by tuberculosis or metastases[7]. In this patient however, the sclerotic L1 vertebral body favours the latter.

MR findings of tuberculous spondylitis were also similar to that of neoplasm, with lack of abnormal signal from the intervertebral disc and endplates. Differentiation between these two disorders may also be impossible on the basis of MR images alone [8,9].

The third diagnostic problem was then to determine the primary site of the metastatic tumour. Had it not been for the bulkiness and loss of definition of the lower moiety of the left kidney, both in th MR and sonographic imaging, a spread from the previous cervical carcinoma would have been the obvious choice. As mentioned earlier, carcinoma from both these sites may spread to the psoas compartment was well as to the spine[3,10]. This was solved by the selective renal arteriography in this patient.

It was unfortunate that the earlier CT guided aspiration biopsy was not able to provide a full diagnosis. However the percutaneous aspiration biopsy which was performed in this patient was able to provide a rapid and efficient method in confirming the diagnosis of the left psoas abscess with an underlying malignancy. In certain cases it may also obviate the need for surgery. Formal surgical drainage of the psoas abscess is indicated when the abscess involves adjacent structures such as kidney or bowel and in this patient to provide the final diagnosis[1,11].

Bony metastases are the second commonest sites for distant metastases in carcinoma of cervix [12]. These are infrequent with most clinical series reporting an incidence of 3% to 4% [13].

However Bassan et al reported bone secondaries in 16% of 88 patients [14]. Osseous metastases are rare at time of primary detection of the carcinoma with only one case in 55 patients recorded by Blythe et al [13]. The earliest bony metastases noted by Peeples et al was 8 months with most occurring between 1 to 3 years after initial diagnosis of the cancer [12]. Thirteen years was the longest interval noted by Blythe et al [13]. Bassan et al however noted that bone secondaries occur earlier in poorly differentiated cervical carcinoma [14]. The most common sites for bony metastases were the vertebral body and pelvis although metastases had been reported in all bones [12,13,15]. The mechanism of vertebral involvement was due to extension of tumour from paraaortic nodes. Haematogenous spread is rare [13]. The common plain radiographic appearance is osteolytic destruction [13,14]. Only one of the series of fifty-five was found by Blythe et al to have purely osteoblastic lesion [13]. However the incidence of both osteolytic and osteobastic lesions presenting in the spine as in this patient is not known. The sclerotic lesion which appeared mainly in the centre of the L1 vertebral body suggests a possible spread via the vertebral venous plexuses (haematogenous route) rather than direct extension from a lymph node.

In conclusion, this case demonstrates certain difficulties in the clinical diagnosis of psoas pathology, even with the newer imaging modalities, as most of the findings are non specific. An undefinable bulky mass at the lower pole of the left kidney, a sclerotic vertebral body and what appeared to be classical psoas abscess were difficult to tie together until the histology revealed metastatic squamous cell carcinoma of the cervix.

The "psoas abscess" finally turned out to be comprised of an infected necrotic metastatic lymph node, the sclerotic vertebral body, osteoblastic bony metastases and osteopenic lytic metastases in the vertebral bodies.

ACKNOWLEDGEMENT

We would like to acknowledge the Department of Orthopaedics, University Hospital and the Department of Radiology, Pantai Medical Centre, Kuala Lumpur for their assistance in the management and diagnosis in this patient.

REFERENCES

1. Williams MP. Non-tuberculous psoas abscess. Clin Radiol 1986;37:253-6.
2. Weinreb JC, Cohen JM, Maravilla KR. Iliopsoas muscles:MR study of normal anatomy and disease. Radiology 1985;156:435-40.
3. Lee JKT, Glazer HS. Psoas muscle disorders : MR imaging. Radiology 1986;160:683-7.
4. Donovan PJ, Zerhouni EA, Siegelman SS. CT of the psoas compartment of the retroperitoneum. Semin Roentgenol 1981;16:241-50.
5. Leu SYL, Leonard MB, Beart RW, Dozois RR. Psoas abscess: changing patterns of diagnosis and etiology. Dis Colon Rectum 1986;29:694-8.
6. Smith AS, Blaser SI. Infections and inflammatory process of the spine. Radiol Clin North Am 1991;29:813-21.
7. Whelan MA, Naidich DP, Post JD, Chase NE. Computed tomography of spinal tuberculosis. J Comput Assist Tomogr 1983;7:25-30.
8. Smith AS, Weinstein MA, Mizushima A, Coughlin B, Hayden SP, Lakin MM, et al. MR imaging characteristics of tuberculous spondylitis vs vertebral osteomyelitis. Am J Neuroradiol 1989;10:619-25.
9. Modic MT, Feiglin DH, Piraino DW, Boumphrey F, Weinstein MA, Duchesneau PM, et al. Vertebral osteomyelitis:Assessment using MR. Radiology 1985;157:157-66.
10. Fornasier VL, Horne JG. Metastases to the vertebral column. Cancer 1975;36:590-4.
11. Ralls PW, Boswell W, Henderson R, Rogers W, Boger D, Halls J. CT of inflammatory disease of the psoas muscle. Am J Roentgenol 1980;134:767-70.
12. Peeples WJ, Inalsingh CHA, Hazra TA, Graft BS. The occurrence of metastasis outside the abdomen and retroperitoneal space in invasive carcinoma of the cervix. Gynecol Oncol 1976;4:307-10.
13. Blythe JG, Ptacek JJ, Buchsbaum HJ, Latourette HB. Bony metastases from carcinoma of cervix. Cancer 1975;36:475-84.
14. Bassan JS, Glaser MG. Bony metastasis in carcinoma of the uterine cervix. Clin Radiol 1982;33:623-5.
15. Evans WF, Graham JE, Buchsbaum HJ. Pain from bone metastases as the admitting complaint in cervical cancer. Am J Obstet Gynecol 1983;145:765-6.