Primary psoas abscess

Primary psoas abscesses are a rare infection with an often vague and non-specific clinical presentation, especially in children. In Asia and Africa 99.5% of all psoas abscesses are primary, compared with 61% in the United States and Canada and 18.7% in Europe.\(^1\) Approximately 70% of psoas abscesses occur in patients younger than 20 years of age, with a male preponderance of 3:1.\(^1\) Fifty seven per cent of psoas abscesses occur on the right side, 40% on the left side, and 3% bilaterally.\(^1\) We present the following case and show the magnetic resonance imaging to emphasize the presenting signs, symptoms, and findings of this unusual infection.

A 13 year old white girl was in excellent health until she developed a dull ache in the superior posterior thigh without radiation. She denied any direct trauma or excessive strenuous activity. Over five days she developed progressively severe, dull pain, localised to the posterior hip in association with fever to 38.9°C, nausea, vomiting, and diarrhoea. She walked with a limp. Her past medical history was non-contributory; she denied smoking, alcohol, drug use, or sexual activity. The girl was 1.52 m tall and weighed 70 kg. Vital signs were normal; temperature rose to 38.9°C within 24 hours of admission. A detailed general physical examination was normal. Abdominal and pelvic examinations were benign without organomegaly or peritoneal signs. Stool for occult blood was negative. Musculoskeletal examination was normal, with the exception of the left hip which showed pain on active and passive motion, particularly abduction and medial rotation. The range of motion of the hip was normal; there was no localised warmth or palpation tenderness. The gait was antalgic for the left leg.

Laboratory examination showed a white blood cell count of 15.2 × 10⁹/l (77% neutrophils/14% lymphocytes/8% monocytes) and platelets of 415 × 10³/l. An erythrocyte sedimentation rate was 115 mm/1st h (normal <20 mm/1st h). Urine analysis disclosed trace blood and protein; the remainder of the laboratory tests were within normal limits. Blood and cervical cultures were negative. Posteroanterior radiographic examination of the left hip was normal. Bone scan was normal. Magnetic resonance imaging (MRI) of the abdomen and pelvis showed grossly abnormal signal intensities of the left psoas muscle (figs 1 and 2). Although a discrete abscess was identified, fine needle aspiration under imaging guidance yielded no pathological material. Vancomycin was started empirically, based on current literature. Blood cultures were negative. An intravenous pyelogram may show deviation of the kidney and ureter. Barium studies may disclose bowel loop displacement and associated gastrointestinal diseases.\(^1\)\(^,\)\(^3\) However, the most common diagnostic imaging test is computed tomography scan (CT) or MRI, which typically show a low density lesion of the psoas muscle and gas within the muscle itself.\(^1\) \(^,\)\(^3\) There may be rim enhancement of the abscess wall with contrast medium injection. Definitive diagnosis is made by fine needle aspiration under imaging guidance, and microbial culture of the causative organism.\(^1\) If abdominal CT or MRI is unavailable, ultrasonography may demonstrate the inflammatory mass.\(^9\) Gallium-67 scanning may be useful in the diagnosis of psoas abscesses and detection of concomitant infectious foci.\(^2\)

The cause of primary psoas abscesses remains uncertain. Proposed mechanisms of psoas abscess formation include haematogenous spread from primary infectious foci or local trauma with intramuscular haematoma formation predisposing to abscess development.\(^4\) In secondary psoas abscess the most commonly associated disorder is Crohn's disease; other disorders include appendicitis, colonic inflammation or neoplasm, disc infections, and a variety of intra-abdominal or retroperitoneal infections.\(^5\)\(^,\)\(^6\)\(^,\)\(^7\) Primary psoas abscesses are caused by a single organism in 87.5% of cases; primary organisms include Staphylococcus aureus (88.4%), streptococci (4.9%), and Escherichia coli (2.8%).\(^8\) Blood cultures are positive in 41.7%, usually for Staphylococcus aureus. In the past decade the majority of patients with a primary psoas abscess were intravenous drug users (86%) infected with the human immunodeficiency virus (57%).\(^9\)

Treatment for primary psoas abscess includes percutaneous drainage combined with systemic antibiotic administration.\(^3\) Surgical drainage is preferred for the patients in whom the psoas abscess is associated with underlying bowel disease.\(^2\) With appropriate treatment, psoas abscess rarely results in death (2.5%).\(^1\) Death from psoas abscess is associated more commonly with inadequate or delayed drainage, or both.\(^2\) Our patient responded well to antibiotic treatment and recovered completely.

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**Figure 1** Coronal magnetic resonance imaging scan of the abdomen showing abnormal signal intensity in the inferior pole of the left psoas muscle (arrows). Note the proximity of the psoas to the femoral head.

**Figure 2** Cross sectional magnetic resonance imaging of the pelvis showing abnormal signal intensity of the psoas closely approximating the bladder (arrows).
Klippel-Feil syndrome in the prehispanic population of El Hierro (Canary Islands)

Klippel-Feil syndrome is an uncommon anomaly (1:40 000 births), mainly affecting the cervical spine. The classic clinical triad described by Klippel and Feil in 1912—short neck, low dorsal hairline, and restricted neck mobility—is the result of the fusion of a variable number of cervical vertebrae, sometimes reducing their number, and cervical spina bifida. Extraosseous changes, such as hemivertebrae, vertebral body clefts, and thoracolumbar abnormalities, are sometimes seen. In a prehispanic ossuary containing remains of at least 121 subjects in the island of El Hierro (Canary Islands), we noted:

1. A C2-3 block, with both vertebrae fused by the vertebral bodies and the medial ends of the arches, well preserved right intervertebral foramina, and foramina transversaria (fig 1), and a normal medullar canal. The body of the third vertebra shows intense degenerative signs.

2. A C5-6 block, consisting of two vertebrae with intense degenerative changes fused both by the vertebral bodies and the medial part of the arches. Both cervical blocks seem to belong to the same subject.

3. A well preserved atlas bone, with an incomplete anterior part of the left arch, with sharp, fine proximal, and distal ends (fig 2A), supporting an underlying developmental defect rather than an acquired one.

4. A left hemiatlas (fig 2B); although it is possible that the right body of the bone was partially fused with the left one (and was not recovered in the archaeological excavation), the posterior end of the arch was neither fractured nor fused to any other bony structure, thus pointing to a developmental defect.

Fusion of C2 and C3 (and C5-6), hypoplasia of the arch of the atlas, and complete bipartition of the atlas constitute distinctive features of Klippel-Feil disease. Thus the subject with the fused C2-3 and C5-6 blocks and the hemiatlas was probably affected by this disease. Possibly, the second atlas belongs to another subject with the same disease, though this possibility should be cautiously admitted. The two atlas bones show different developmental abnormalities. In the newborn, the ossification of the cartilaginous anterior and posterior arches of the atlas takes place progressively from the already ossified lateral masses. Often, especially in the anterior arch, secondary ossification centre(s) appear. In our case it seems that hypoplastic development of the anterior left arch took place. Because the hypoplastic part of the arch is in its middle part, probably, a second ossification centre was present, but ossification was never completed; in this sense, it is similar to the case described by Chigira et al., which also showed fusion of C5-6.

The “hemiatlas” perhaps is really an atlas with a midline cleft and a lost half, though the posterior arch does not reach the midline, so it never became fused with the right half of the bone. A secondary posterior ossification centre sometimes appears during the first years of life. In this case, it was absent, in contrast with the anterior secondary ossification centre which was surely present in the former case.

Perhaps familial links existed between the two subjects. Klippel-Feil syndrome is a heterogenous disorder, showing different alterations in different families. The simultaneous finding of different developmental abnormalities of the atlas in our two cases—assuming that the second one truly represents a case of Klippel-Feil—may either reflect an unusually high prevalence of this entity in the prehispanic population of El Hierro, or may also indicate that even in the same family clinical expression of the Klippel-Feil syndrome is variable.

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**Figure 1** Fused C2-3 vertebral block.

**Figure 2** (A) Atlas with a hypoplastic left arch; the lack of fusion of the anterior arch of the left foramen transversarium is also evident. (B) Left hemiatlas.

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**Haematopoietic stem cell transplantation (HSCT) in a patient with Sjögren's syndrome and lung malt lymphoma not the autoimmune disease**

Haematopoietic stem cell transplantation (HSCT) has been used in an attempt to control autoimmune diseases that respond poorly to conventional treatment, or as a way
of readjusting the immunological balance. As far as we know, only one case of primary Sjögren's (SS) has been reported, with an unfavourable outcome. Another patient received an allogeneic bone marrow transplant and also had an unfavourable outcome. We describe here a further patient with primary SS who underwent HSCT for a non-Hodgkin lymphoma affecting the lung (large cell, mucosa associated lymphoid tissue (MALT) lymphoma) and review the literature on the effects of HSCT on the autoimmune features and histopathological changes in primary SS.

Case report

A white woman, aged 42, developed recurrent parotid swelling and symptomatic sicca syndrome, with a Schirmer's test I of 5 mm in the right eye and 4 mm in the left eye. Break up time was 6 s and sialometry was <1 ml. She had periodic relapses of her parotid swelling. In August 1994 (aged 57) lung x-rays and computed tomography disclosed a parenchymal nodule of 3 cm in diameter in the basal left lobe. She underwent a lobectomy that disclosed a MALT of the large cell B lymphoma histotype, stage IE. In December 1994 two more nodules in the right lobe, with hilar bilateral adenomegaly, led to the diagnosis of a relapse of her lymphoma, which had progressed to stage IV. She then received six courses of F-MACHOP (vincristine 0.5 mg/m² at hours 0 and 12; cyclophosphamide 800 mg/m² intravenous (IV) bolus at hour 36, 5-fluorouracil 15 mg/kg IV for six hours at hour 36, 4-aminopteryn methotrexate 500 mg/m² IV for six hours at hour 48, methotrexate rescue (20 mg/m² IV bolus at hours 84, 96, 108, 120), with a prompt reduction of hilar adenopathies and a net decrease of pulmonary nodule size. However, no complete remission was recorded. She was then offered the possible chance of an HSCT. The patient (patient 1) reports the myeloablation, conditioning, recovery, and reinfection of stem cells. After three years of follow up no relapse of the lymphoma has occurred. Sjögren syndrome after transplantation was unmodified, however, with a persistently poor function of the salivary glands, an unchanged serology (antinuclear antibody titre 1/2560), and an unchanged histopathology (Chisholm-Mason grading = 4) despite having mild fibrosis of the salivary glands.

In table 1 we give the characteristics of the other patient with primary SS (No 2), previously reported. It can be seen that the conditioning regimen, previous treatment, stem cell rescue, and bone marrow reconstitution were different. However, in this case, also, SS was not cured and there was no remission. An immunohistological reassessment showed persistence of the immunological imbalance and poor function of the salivary apparatus.

Table 2 shows the results for patients with three more common autoimmune rheumatic diseases (rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and scleroderma (SSc)) treated with HSCT and who received an adequate follow up. A total of 270 such patients are registered so far in the European Bone Marrow Transplant/EULAR database, but the number who have received adequate follow up is much smaller. Current data suggest that best results have been obtained in RA, the worst in SSc, suggesting that T helper 2 oriented diseases have a poorer response.

Results for SS seem to confirm this because HSCT cured lymphoma but did not improve the autoimmune disease. No changes were recorded in the function of salivary glands, or in the synthesis of ANA, or the histopathology. The other case reported did show some early improvement. A complete remission of the glands, but no improvement afterwards and an infection leading to death. Early recurrence of autoimmune features and of autoantibodies was seen in patients with SLE and CREST. We do not know whether various conditioning regimens or myeloablation approaches (with or without T cell depletion) might result in different outcomes. It seems unlikely that T cell depletion would offer a better prospect, especially in view of the increased risk of long term immunosuppression, lymphoproliferative diseases, and infections. On the other hand, allogeneic bone marrow transplantation, even though clearly appealing given the chance of eradicting the intrinsic stem cell defect, does not represent a definite cure either and the related morbidity-mortality still remains too high to be accepted as a possible alternative. As benefits have been seen in around two thirds of the cases treated so far, controlled trials in the three major rheumatic diseases are eagerly waited.

We gratefully acknowledge the invaluable help we received from Professor A Tyndall, who provided us with the latest data available of the EBMT/EULAR registry on haematopoietic stem cell transplantation in autoimmune diseases.

Table 1: Lymphoma characteristics, conditioning regimens, side effects and outcome of the two female patients so far studied, after haematopoietic stem cell transplantation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Patient 1</th>
<th>Patient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>57</td>
<td>64</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>NHL* of the lung (large cells MALT* lymphoma)</td>
<td>Immunoblastic B lymphoma</td>
</tr>
<tr>
<td>First line treatment</td>
<td>6 cycles of F-MACHOP</td>
<td>VACOP-B* followed by VIPE*</td>
</tr>
<tr>
<td>Conditioning regimens</td>
<td>ARA-C* 200 mg x 2/day x 4</td>
<td>BCNU 300 mg/m²</td>
</tr>
<tr>
<td></td>
<td>VP16* 200 mg x 2/day x 4</td>
<td>Etoposide 800 mg/m²</td>
</tr>
<tr>
<td></td>
<td>CTX* 1500 mg/day x 4</td>
<td>Cytarabine 1600 mg/m²</td>
</tr>
<tr>
<td></td>
<td>BCNU* 200 mg</td>
<td>Melphalan 140 mg/m²</td>
</tr>
<tr>
<td>Refusion</td>
<td>MNC* 4.5 x 10⁹/kg</td>
<td>MNC 2.42 x 10⁹/kg</td>
</tr>
<tr>
<td></td>
<td>CD4 0.9 x 10⁹/kg</td>
<td>CD34 4.60 x 10⁹/kg</td>
</tr>
<tr>
<td></td>
<td>CD3 not counted</td>
<td>CD3 37.03 x 10⁹/kg</td>
</tr>
<tr>
<td></td>
<td>Days to PMN* &gt;1 x 10⁹ = 10 days</td>
<td>Days to PMN* &gt;10 x 10⁹=11 days</td>
</tr>
<tr>
<td></td>
<td>Days to Plt* &lt;20 x 10⁹ = 8 days</td>
<td>Days to Plt &lt;50 x 10⁹ = 18 days</td>
</tr>
<tr>
<td>Sides effects/outcomes</td>
<td>Alive in complete continuous lymphoma remission after 3 years</td>
<td>No remission of autoimmune disease</td>
</tr>
<tr>
<td></td>
<td>No remission of autoimmune disease</td>
<td>Died 20 months after transplantation for Pneumocystis carinii pneumonia</td>
</tr>
</tbody>
</table>

*NHL = non-Hodgkin's lymphoma; MALT = mucosa associated lymphoid tissue; F-MACHOP: F = 5-fluorouracil, M = methotrexate, A = Adriamycin, C = cyclophosphamide, H = doxorubicin, O = Oncovin, P = prednisone; ARA-C = arabinoside-C; VP16 = etoposide; CTX = cyclophosphamide; BCNU = carmustine; MNC = mononuclear cells; PMN = polymorphonuclear cells; Plt = platelets; VACOP-B: V = Vepesid, A = Adriamycin, C = cyclophosphamide, O = vincristine, P = prednisone, B = bleomycin; VIPE = vinblastine, I = ifosamide, E = etoposide.
Castleman’s disease

A 65 year old woman presented in February 1998 with joint pains, mild weight loss, and a low grade irregular fever. Initially, pain was localised around both shoulder joints. Subsequently, elbows, wrists, hips, and knees were affected, with morning stiffness, but without particlar stiffness. The symptoms were accentuated by movement, but also persisted during the night, often keeping the patient awake. On clinical examination, there was limited painful movement of the shoulders and hips, with a marked reduction in strength. The small joints of the hands and feet were not affected. No other pathological conditions were found. Laboratory findings showed a marked increase in erythrocyte sedimentation rate (ESR; >100 mm/1st h), hyper-γ, globulinaemia and a mild anaemia, whereas enzymatic activity (serum aspartate aminotransferase, serum alanine aminotransferase, alkaline phosphatase, lactate dehydrogenase, and creatine kinase) was within the normal range. A diagnosis of polymyalgia rheumatica was made and a rapid and marked clinical improvement was obtained with low dose steroid treatment (prednisone 12.5 mg/day). Pain disappeared, muscle strength and joint function became normal within a week. A decrease in ESR (to 40 mm/1st h) and γ globulinaemia was noted and maintained. The clinical condition remained satisfactory during 1998, with a complete normalisation of ESR and γ globulinaemia after three months.

In January 1999 she developed jaundice with pruritus and a subcontinious fever (38.5–39°C). Axial tomography and nuclear magnetic resonance disclosed compression of the biliary duct by a compact, well defined retropancreatic mass (about 4 cm in diameter). The laboratory pattern was typical of cholestatics (hyperbilirubinaemia, increased serum alkaline phosphate activity). Endoscopic retrograde colonopancreatography showed slight enlargement of the biliary tract, dilation of the gall bladder walls, and absence of gall stones. Transit of contrast medium along the biliary tract slowed down. Exploratory laparotomy confirmed the presence of a mass compressing the common bile duct. This was removed and histological examination disclosed a lymph nodal architechture characterised by evident follicular hyperplasia. Some of the germinal centres were enlarged and comprised polymorphous follicular centre cells, whereas other germinal centres were depleted of lymphocytes, and consisted predominantly of dendritic reticular cells showing vascular proliferation. The mantle zone was expanded and concentrically arranged around the atrophic germinal centres (onion skin layers). The interfollicular areas were also prominent, containing small lymphocytes, occasional cosinophils, plasma cells, and some immunoblasts, and showing numerous hyperplastic vessels of the post-capillary venous type. Occasionally these vessels, which were often hyalinated, penetrated the expanded follicles perpendicularly, giving rise to the so-called "lollipop" appearance (fig 1). An immunocytochemical study confirmed the normal organisation of the nodal structures, with a clear positivity of follicular elements for typical B cell markers CD20 and CD79a, and positivity of interfollicular lymphoid elements for T cell markers CD3 and CD45RO, whereas the dendritic reticular cells showed a typical positivity for CD21.

These features are distinctive of Castleman’s disease, also known by the descriptive term angiofollicular lymph node hyperplasia. This is a clinical entity characterised by angiofollicular hyperplasia of the lymph nodes without the presence of any atypical cells or other signs of malignancy. Many (multicentric or systemic form) or single (monocentric or solitary form) lymph nodal groups can be affected in the process and two histological subsets have been recognised: a hyaline-vascular type, characterised by marked expansion of the mantle follicular zone and a plasma cell type, with diffuse plasma cell proliferation in the interfollicular tissue. The cause of the disease is unknown, but overproduction of interleukin 6 has been shown in the course of Castleman’s disease and a possible pathogenic role for this cytokine has been suggested. It is commonly associated with several autoimmune conditions such as systemic lupus erythematosus, Behçet’s disease, amyloidosis, and with various neoplastic diseases, but its onset during the course of polymyalgia rheumatica has not been recently reported. No data exist about the possible relation between Castleman’s disease and polymyalgia, but a role for interleukin 6 can be suggested, perhaps through a stimulating action of this cytokine on monocytes and lymphocytes. The present case can be considered typical of the solitary form, hyaline-vascular type of Castleman’s disease. Our patient did not present any other lymphatic disease during the subsequent months, which would seem to confirm the good prognosis of this disease.

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