



## Disappear to appear again ? Chloroma of the pelvis – A unique osseous presentation

Abhijit R. GUHA, Rahul KOTWAL, Mukund DEGLURKAR

*From Princess of Wales Hospital, Bridgend, United Kingdom*

Osteolytic lesions caused by chloromas or extramedullary myeloid tumours have been reported before. We present a case of localised osteolysis caused by a chloroma, in which complete repair of the bony lesion occurred following chemo- and radiotherapy. We believe that this unique presentation has never been reported before in the English literature.

**Keywords :** chloroma ; localised osteolysis ; bony regeneration.

### INTRODUCTION

Chronic myeloid leukaemia (CML) is a clonal disease of pluripotent haemopoietic stem cells. Extramedullary tumours occur in 3% of patients with myeloid leukaemia, mainly during a blast crisis (4), but osseous involvement is relatively rare in adults. Most bony lesions have been reported to be osteolytic in nature but they can be mixed or sclerotic as well (3).

### CASE REPORT

A 61-year-old lady presented initially in September 2004 with pain in her right groin region and a mass in her right iliac fossa. She complained of severe continuous pain radiating down to her right knee. A radiograph of her pelvis revealed destruction of the superior and inferior pubic

rami on the right side (fig 1). Her inflammatory markers were also raised with WCC 10.1 10<sup>9</sup>/L, CRP 86.5 mg/l and ESR 100 mm/hour but she was afebrile and blood cultures did not reveal any growth. Her corrected serum calcium was normal at 2.35 mmol/L. A CT scan of her pelvis was undertaken and this confirmed an osteolytic lesion involving the pubic rami on the right with an associated mass extending posteriorly and into the adductor compartment of the right leg (fig 2). The para-aortic lymph nodes were also enlarged. A CT guided needle biopsy from the mass confirmed the diagnosis of Chloroma secondary to Chronic Myeloid leukaemia (CML). She was referred on to the regional oncology unit where standard multidrug chemotherapy for CML was started. She made excellent recovery with this and the mass regressed rapidly. She was also given palliative radiotherapy to her right hip with 30 Gy over 10 fractions. She continued to manage on her own,

- Abhijit R. Guha, FRCS, Specialist Registrar.
- Rahul Kotwal, MRCS, Staff Grade.
- Mukund Deglurkar, FRCS, Locum Consultant.

*Department of Orthopaedics, Princess of Wales Hospital, Bridgend, United Kingdom.*

Correspondence : Mr. Abhijit R. Guha, Specialist Orthopaedic Registrar, Princess of Wales Hospital, Coity Road, Bridgend, Mid Glamorgan CF31 1RQ, United Kingdom.  
E-mail : billguha@hotmail.com.

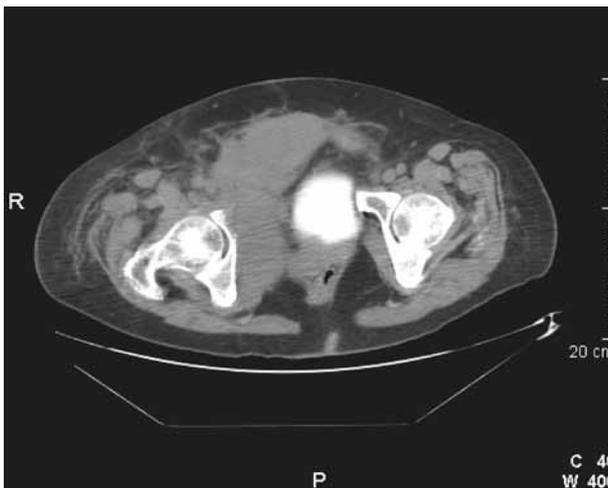
© 2006, Acta Orthopædica Belgica.



**Fig. 1.** — AP view of the pelvis on initial presentation



**Fig. 3.** — AP view of the pelvis on subsequent presentation showing reossification of the right pubic rami.



**Fig. 2.** — CT scan through the pelvis on initial presentation showing soft tissue mass involving the right pubic rami.

until she presented again to us with a pathological fracture through a lytic deposit in the shaft of her left femur. The pelvic radiograph undertaken on this admission surprisingly revealed completely normal pubic rami on either side (fig 3). The rami on her right side had regenerated completely and appeared to be normal. The fracture was treated with a reconstruction nail and she was referred back to the oncology unit for continuation of her chemotherapy.

## DISCUSSION

Granulocytic sarcoma, also referred to as Chloroma, is a localised tumour mass composed of immature cells of the granulocytic series (2). Burns first described the tumour in 1811 (4). King initially called it Chloroma because of the green colour exhibited by a typical lesion secondary to the presence of high levels of myeloperoxidase in the premature cells (2, 4). The colour rapidly fades on exposure to air. However, this colour is often lacking and Rappaport in 1966 renamed it as granulocytic sarcoma (4). Granulocytic sarcomas occur with acute and chronic myeloid leukaemia, myeloproliferative disorders such as myelofibrosis with myeloid metaplasia, polycythaemia and hypereosinophilic syndrome (1, 8). They can present at various sites, including the skin, ligamentous and periosteal structures, oral cavity, gastrointestinal tract, cranium and the genitalia (2, 7, 8). Granulocytic sarcomas arise in the bone marrow and traverse the haversian canals to reach the periosteum, resulting in bone lysis and sometimes adjacent soft tissue masses and periostitis. Chloromas commonly present late in the course of the disease or with a relapse. They are usually associated with poor prognosis and most cases of granulocytic sarcoma that occur in non leukaemic patients progress to acute myeloid leukaemia within 1 year with a

median survival of 22 months (1). The usual CT finding in osseous chloroma is almost invariably that of destruction of the cortex and medulla with an adjacent soft tissue mass and periosteal reaction (2). In one report, a pelvic chloroma presented with a mixed lytic and sclerotic appearance on CT (2). However, complete healing of the erosive bony lesion as in our case, has never been reported before. In our patient, chemotherapy and subsequent radiotherapy resulted in leukaemic remission with rapid regression of the mass and this probably allowed progression to bone healing.

### REFERENCES

1. Imrie KR, Kovacs MJ, Selby D *et al.* Isolated chloroma – the effect of early anti-leukaemic therapy. *Ann Intern Med* 1995 ; 123 : 351-353.
2. Libson E, Bloom RA, Polliack A. Granulocytic sarcoma (chloroma) of bone : The CT appearance. *Computerized Radiol* 1986 ; 10 : 175-178.
3. Licht A, Many N, Rachmilewitz EA. Myelofibrosis, osteolytic bone lesions and hypercalcemia in chronic myeloid leukaemia. *Acta Haemat* 1973 ; 49 : 182-189.
4. Neimann RS, Barcos M, Berard C *et al.* Granulocytic sarcoma – a clinico-pathologic study of 61 biopsied cases. *Cancer* 1981 ; 48 : 426-427.
5. Nesbitt J, Roth RE. Solitary lytic bone lesion in an adult with chronic myelogenous leukaemia. *Radiology* 1955 ; 64 : 724.
6. Oppermann HC, Ludwig R, Georgi P. Osteolytic lesion in chronic myelogenous leukaemia. *Paediatr Radiol* 1979 ; 8 : 254-256.
7. Pomeranz SJ, Hawkins HH, Towbin R *et al.* Granulocytic sarcoma (chloroma) : CT manifestations. *Radiology* 1985 ; 155 : 167-70.
8. Rekha A, Ravi A, Thanka J, Kuruvilla S. Chronic lower limb ulcer ? No – Chloroma ! *Lower Extremity Wounds*. 2003 ; 2 : 168-70.
9. Tricot G, Boogaerts MA, Broeckaert-Van Orshoven A, Criel A, Van Hoof A, Van Der Berghe H. Hypercalcemia and diffuse osteolytic lesions in the acute phase of chronic myelogenous leukaemia. *Cancer* 1983 ; 52 : 841-845.