

bradykinin in guinea pigs,<sup>31</sup> and inhaled kinins can provoke bronchoconstriction in asthmatic patients.<sup>32</sup> The data presented in this paper do not support a relation with asthma, but the mechanism of production of cough may be similar and might be mediated by the local irritant effect of increased bradykinin as suggested by Stark.<sup>33</sup> Any postulated mechanism for the reaction would need to take into account the preponderance of women among the patients with cough. The similar age distribution of the men and women and the fact that most of the women were postmenopausal suggests that sex hormones do not have an influence. Captopril enhances the release of prostaglandin-like substance from guinea pig lungs<sup>31</sup> and can increase production of prostaglandin E<sub>2</sub> in patients with hypertension.<sup>34</sup> Prostaglandin E<sub>2</sub> and others have an irritant effect on the respiratory tract, and so prostaglandins should be considered as possible mediators.<sup>35</sup>

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# SHORT REPORTS

## Hypogonadism induced by luteinising hormone releasing hormone agonist analogues: effects on bone density in premenopausal women

Luteinising hormone releasing hormone agonists can be used to treat several gynaecological and non-gynaecological conditions in women. By inducing reversible suppression of gonadotrophin secretion and subsequent hypo-oestrogenism luteinising hormone releasing hormone agonists may be useful in conditions related to sex hormones—for example, precocious puberty, uterine leiomyoma,<sup>1</sup> and endometriosis.<sup>2</sup>

Most patients who receive luteinising hormone releasing hormone agonist treatment experience symptoms of oestrogen deficiency.<sup>2</sup> In postmenopausal women hypo-oestrogenism may be associated with increased loss of bone mass. We determined the possible effects on skeletal bone mass of hypo-oestrogenism resulting from the therapeutic use of the potent luteinising hormone releasing hormone agonist (6-O-tert-butyl-D-serine)-des-10-glycinamide-gonadorelin ethylamide (buserelin) (Hoechst Pharmaceuticals).

### Patients, methods, and results

Thirteen patients aged 22-37 each received 400 µg buserelin intranasally every eight hours for six months as treatment for proved endometriosis. Trabecular bone in the spine and cortical bone in the femur were measured before and after treatment. The approval of the medical ethical committee and the informed consent of the patients were obtained.

The density of trabecular bone in the lumbar vertebrae (mean density in L2-4) was measured by computed tomography (General Electric 8600 scanner), with

the patient lying on a calibration phantom.<sup>3</sup> The precision for this technique is about 3%, and the absorbed radiation dose was about 3 mSv in the abdominal region for each measurement. The bone mineral content was measured at the centre of the right femur, where the bone is predominantly cortical, with a dual photon densitometer (Novo BMC-Lab 22a) that contained a source of gadolinium-153 (44 and 100 keV).<sup>4</sup> The precision for these measurements was about 1.5% and the radiation dose 0.1 mSv at the site of measurement.

There was no significant change in patients' weight, diet, smoking, and exercise patterns during treatment. The mean (SEM) serum oestradiol—17 β concentrations after three months' and six months' treatment were 141 (21) pmol/l and 118 (27) pmol/l, respectively. Amenorrhoea was achieved in all patients after an initial slight withdrawal bleeding episode in the first month. Four patients had further occasional scanty losses during treatment. All but two patients experienced hot flushes and some had reduced vaginal secretions.

Before treatment the mean densities of trabecular and cortical bone were 184.8 (7.1) mg/cm<sup>3</sup> and 3.4 (0.1) g/cm, respectively. There was a small but marginally significant reduction in both trabecular bone density in the lumbar vertebrae (4.6 (2.1)%; p=0.06) and in bone mineral content for cortical bone in the femur and mid-shaft (table). In one patient the second computed tomographic measurement was not performed for technical reasons.

### Comment

Genant *et al* reported a trabecular bone loss of 9% in the first year after surgical oophorectomy in 31 premenopausal women and a smaller effect on peripheral cortical bone.<sup>5</sup> We are currently trying to establish whether the return of ovarian steroidogenic activity after treatment with luteinising hormone releasing hormone agonist has been stopped results in the complete regain of trabecular bone lost because of the hypo-oestrogenism during treatment. Despite reduced circulating oestradiol concentrations some patients in this study did not show appreciable losses, and they need to be investigated further to see if it is possible to predict those patients who respond in this manner.

## Summary of results

Case No	Computed tomographic measurements of trabecular bone density in L2-4 (% ratio of 2nd:1st measurements)	Dual photon measurements of bone mineral content on right mid-femur shaft (% ratio of 2nd:1st measurements)	Serum oestradiol -17 $\beta$ (pmol/l) after 3 months' treatment
1	90.3	100.5	193
2	95.3	100.6	79
3	87.6	97.9	144
4	—	100.0	205
5	96.8	96.9	48
6	86.2	96.4	77
7	107.3	98.8	224
8	92.5	98.8	145
9	109.9	99.4	48
10	101.9	101.9	130
11	93.9	99.4	71
12	93.5	99.3	279
13	91.0	98.6	196
Mean (SEM)	95.4 (2.1)	99.1 (0.4)	141 (21)
*Significance	p=0.06	p=0.06	

\*Paired Student's *t* test.

The data presented suggest that any increased trabecular bone loss seen in patients receiving luteinising hormone releasing hormone agonist treatment might be a factor in determining both the duration of treatment and the timing of possible repeated courses in premenopausal women receiving such agonists for the treatment of benign gynaecological conditions.

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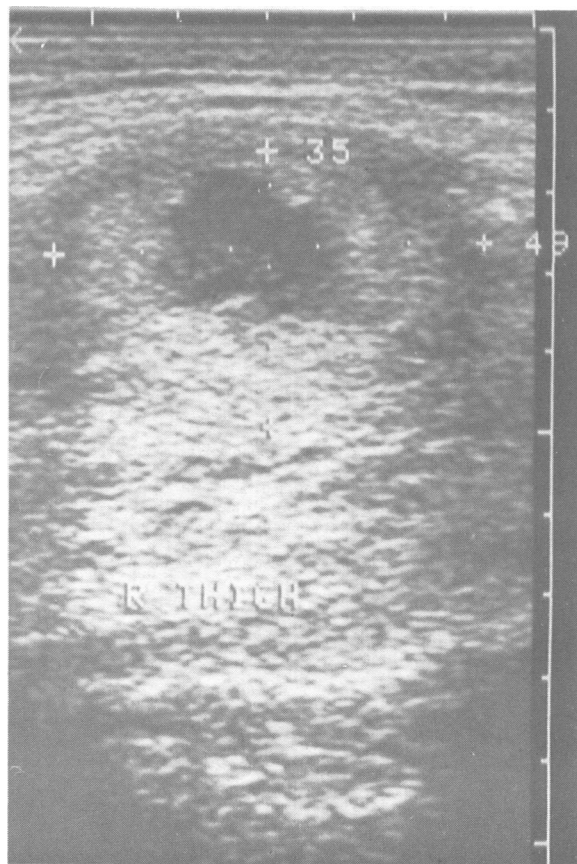
## Pyomyositis associated with human immunodeficiency virus infection

Pyogenic intramuscular abscesses (pyomyositis) are rare in temperate climates. Their cause is unknown, but trauma, travel to the tropics, diabetes, drug abuse, and neutropenia have been associated.<sup>1</sup> We report a case occurring in a homosexual man with antibodies to the human immunodeficiency virus (HIV) and none of the recognised risk factors.

### Case report

A 52 year old white homosexual man presented with a two month history of malaise and a painful lump in the right thigh. There was a history of syphilis and of acute allergic vasculitis, which had settled spontaneously. He denied any sexual contact for seven years. There was no history of drug abuse, trauma, or recent travel abroad.

On examination he was feverish (38°C). There was erythema overlying a mass in the right thigh measuring 6×4 cm. Physical examination showed nothing remarkable except an anal ulcer. Further investigation showed: haemoglobin 122 g/l, white cell count 5.2×10<sup>9</sup>/l, Westergren erythrocyte sedimentation rate (ESR) 56 mm in first hour, and albumin 32 g/l. There was serological evidence of previous syphilitic infection. Enzyme linked immunosorbent assay (ELISA) for HIV antibodies was positive. Blood cultures on three occasions were sterile. Ultrasound scanning showed an intramuscular necrotic mass (figure), and an abscess was found at open biopsy. The pus was sterile, and histological examination of the abscess wall showed non-specific inflammation without evidence of malignancy. Fever persisted after the operation, intravenous gentamicin and flucloxacillin were given for 48 hours, and the abscess healed. Intercurrent oropharyngeal candidiasis responded to amphotericin. The patient has subsequently developed a progressive encephalopathy.



Ultrasound scan of right thigh showing an intramuscular necrotic mass.

### Comment

Pyomyositis is common in the tropics, where it accounts for 4% of surgical admissions and is associated with trauma, poor nutrition, and acute viral infections.<sup>2,3</sup> The incidence in temperate climates is unknown, and reports of pyomyositis in the indigenous populations are rare<sup>1,4</sup>; when it does occur it is associated with recent travel to the tropics, trauma, diabetes, and drug abuse.<sup>1</sup>

Presentation is with painful swelling of a large muscle, which becomes increasingly hard and indurated, described typically as "woody hard," before eventually becoming fluctuant. There may be accompanying fever, malaise, anaemia, leucocytosis, and raised erythrocyte sedimentation rate. Sites commonly affected are the quadriceps and gluteal muscles, and multiple abscesses occur in 60% of cases.<sup>1</sup> Most cases occur in children and men aged 20-45 years.<sup>1,3</sup>

The differential diagnosis of pyomyositis includes sarcoma, haematoma, and cellulitis. Methods of diagnosis include needle aspiration, ultrasonography, and computed tomography. Diagnosis is hard in the early stages because the classical signs of inflammation are not present; differentiation from sarcoma may be difficult.<sup>1,5</sup> Needle aspiration yields pus from which an organism may be identified. Ultrasonography will show an abscess cavity and assists aspiration. *Staphylococcus aureus* can be cultured in about 85% of cases but is cultured from blood in fewer than 5% of cases.<sup>1,3</sup> The remainder are associated with a range of infections, and no organisms are isolated in 4-5% of cases.<sup>1,3</sup>