Gynaecomastia as a presenting feature of thyrotoxicosis

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Summary

The association between gynaecomastia and thyrotoxicosis is well recognised. However, the reported frequency of the association is variable, partly depending upon the defining criteria used. Here we report two patients with thyrotoxicosis in whom gynaecomastia was the presenting feature. Both patients had other contributing factors, which are assumed to have predisposed to gynaecomastia. In both patients, the gynaecomastia resolved with successful treatment of the thyrotoxicosis. When gynaecomastia is a presenting, or prominent feature of thyrotoxicosis, the possibility of additional underlying pathology should be considered.

Keywords: gynaecomastia; thyrotoxicosis; sex hormone

Gynaecomastia has long been known to be associated with thyrotoxicosis but does not usually occur as a presenting feature of the condition. Its reported frequency was as high as 40% in two early series.[1 2] However, recent reviews suggest a much lower frequency than previously thought.[3 4] Differences in reported frequency depend in part upon the criteria used for defining the presence of gynaecomastia.

Here we report two patients with thyrotoxicosis in whom gynaecomastia was the initial presenting feature. Subsequent investigations showed that there were other co-existing factors in both patients to explain the development of gynaecomastia.

Case reports

Case 1

A 30-year-old Chinese man presented to his general practitioner because of left-sided gynaecomastia with galactorrhoea, associated with decreased libido and sexual potency for 6 months. He was referred for further investigation. His wife was pregnant at 8 weeks gestation. There was no history of drug intake. There were no symptoms of thyrotoxicosis. Physical examination confirmed left-sided gynaecomastia and galactorrhoea. Secondary sexual characteristics, testis, fundi and visual fields were all normal. A small soft goitre was palpable. Initial investigations showed that he was biochemically thyrotoxic with serum sensitive thyroid stimulating hormone (sTSH) < 0.03 mIU/l (normal range: 0.3–4 mIU/l), and free thyroxine (T_4) 22.9 pmol/l (10.2–19.6). Anti thyroglobulin and anti thyroid microsomal antibodies were negative. The prolactin concentration was elevated at 1320 mIU/l (<480). Follicle-stimulating hormone (FSH) was 2.4 IU/l (<12), luteinising hormone (LH) 3.5 IU/l (<15), and testosterone 5.9 nmol/l (12.0–34.0), indicating hypogonadotrophic hypogonadism. Oestradiol concentration was 112 pmol/l (<361). Sex hormone binding globulin (SHBG) was 15 nmol/l (10–62).

Dynamic pituitary function tests revealed an adequate cortisol and growth hormone (GH) response to glucagon stimulation with peak cortisol and GH concentrations of 680 nmol/l and 20.0 mIU/l, respectively. A LH-releasing hormone(LHRH) stimulation test showed an impaired FSH response (baseline concentration 2.3 IU/l and peak concentration 4.0 IU/l). Thyrotropin-releasing hormone (TRH) test was also performed and sTSH was persistently less than 0.03 mIU/l, consistent with thyrotoxicosis. Magnetic resonance imaging of the hypothalamic–pituitary region was normal.

He was treated with carbimazole using a dose-titration regime. Free T_4 returned to normal after 2 months treatment and has remained in the normal range. The gynaecomastia showed gradual improvement after 3 months' treatment with carbimazole. However, the galactorrhoea persisted despite carbimazole, and the prolactin concentration remained in the range 1400–1800 mIU/l. Testosterone also remained low, range 2.3–8.7 nmol/l. His sexual drive and impotence showed no improvement. Bromocriptine was therefore added to control the hyperprolactinaemia, whereupon the prolactin concentration fell to 80 mIU/l and testosterone increased to 13.8 nmol/l. His galactorrhoea resolved with restoration of normal sexual function.

Case 2

A 35-year-old Caucasian man presented with right-sided gynaecomastia for 3 months. He gave a history of lymphocytic lymphoma at the age of 16 years, which was treated by radiotherapy and surgery in Australia. The radiotherapy field included the groin region. Chemotherapy was not administered. Since that time, there had been no recurrence of the lymphoma. However, he had had bilateral hydroceles as a consequence of radiotherapy. Sexual drive and potency were normal. Physical examination showed the right testis to be diminished in size and there was marked lymphoedema of the left leg. Significant gynae-

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Table Sex hormone profile before and after treatment

	Before treatment	*After treatment*	*Normal value*
Testosterone (nmol/l)	46.5	10.2	10–30
Free testosterone (pmol/l)	532	313	134–844
SHBG (nmol/l)	122	19	10–62

Learning point

Gynaecomastia is an uncommon presenting feature of thyrotoxicosis in men. When it occurs, additional causes of hypogonadism should actively be sought

comastia was confirmed on the right side while the left was normal. There was no galactorrhoea, visual field defect or loss of secondary sexual characteristics. Initial investigations showed elevation of FSH to 38.3 IU/l, but normal testosterone, prolactin, oestradiol and LH concentrations. His SHBG was 122 nmol/l. Ultrasound confirmed a small right testis but the left testis was normal, and there was no evidence of recurrence of the lymphoma.

Two months later, he also developed left gynaecomastia. At this time, he reported a weight loss of 6 kg, associated with palpitations and tremor. These symptoms had developed subsequent to the first visit. Physical examination revealed fine hand tremor, with a pulse rate of 96 beats/min and a small goitre. Thyroid hormone measurements confirmed thyrotoxicosis with sTSH <0.03 mIU/l and free T_4 of 123 pmol/l. He was treated with carbimazole. Within 2 months, his free T_4 returned to normal and his gynaecomastia resolved completely. In parallel with these improvements, his testosterone and SHBG concentration also normalised with control of the thyrotoxicosis (table). The raised FSH concentration (48.7 IU/l) persisted after treatment, indicating the presence of subclinical hypogonadism independent of the thyroid status and presumably attributable to the previous radiotherapy for the lymphoma.

Discussion

In earlier reports, gynaecomastia was suggested to be a common manifestation of thyrotoxicosis, with a prevalence of 30–40%. In the series of Becker *et al*,[1] five of 12 male patients had gynaecomastia; while in the series of Ashkar *et al*,[2] 15 of 40 had gynaecomastia. More recent studies have, however, suggested a weaker association. For example, Cheah showed that only one case out of 51 thyrotoxic men had gynaecomastia,[3] while Tan *et al* reviewed 180 male thyrotoxic patients and none presented with gynaecomastia.[5] The former two reports related to Caucasian patients, whereas the two more recent series related to Oriental patients. It should be noted that, in these four series, the presence of gynaecomastia was defined either by physical examination of consecutive patients or by review of case notes. Thus, variation in assignment is possible. Although there are ethnic differences between the early and recent series, differences in the definition and assignment of gynaecomastia are more likely to account for the observed differences. Cheah, however, deliberately looked for evidence of gynaecomastia in his thyrotoxic patients, and a discrepancy due to a low index of suspicion would not appear to be the case.[3] Our local experience in Hong Kong also indicates that clinically apparent gynaecomastia is uncommon in Oriental thyrotoxic patients.

Gynaecomastia develops when there is an increase in the free oestrogen/androgen ratio. Progesterone may have an additive effect. Hyperprolactinaemia leads to galactorrhoea but does not usually have a direct effect on the development of gynaecomastia.[6 7] In thyrotoxicosis, the typical changes in sex hormone profiles in men are raised total testosterone, SHBG, dihydrotestosterone, total oestradiol and LH.[8–10] The increase in total testosterone can be accounted for by the increase in SHBG concentration.[8 10] The concentrations of total and unbound oestradiol and LH are higher in subjects with gynaecomastia. While the increase in SHBG leads to a reduction in free testosterone, increased peripheral conversion of androgen to oestrogen appears to contribute to the high oestradiol concentration in hyperthyroidism.[8 10] The gynaecomastia resolves after control of thyrotoxicosis, with reversion of histological changes.[1]

In our two patients, case 2 had a typical 'thyrotoxic' sex hormone profile with raised SHBG, and total testosterone at the time of presentation. However, subclinical hypogonadism was also documented before presentation of thyrotoxicosis. The hormonal profile in case 1 (low testosterone, impaired FSH and LH response to LHRH, and normal SHBG) is consistent with hyperprolactinaemia. However, the fact that gynaecomastia (but not galactorrhoea) subsided after control of thyrotoxicosis, but before commencement of bromocriptine, further supports the suggestion that thyrotoxicosis was responsible for the gynaecomastia. Both cases showed resolution of gynaecomastia after reversal of thyrotoxicosis. These two cases share one common feature, namely the presence of an additional insult apart from thyrotoxicosis. In case 1, hyperprolactinaemia causing hypogonadotrophic hypogonadism, was a major factor with superimposed (relatively mild) thyrotoxicosis precipitating the clinical presentation. In case 2, the underlying pathology was (relatively mild) subclinical gonadal failure but the thyrotoxicosis was more severe.

We conclude that gynaecomastia is unusual as the initial feature of thyrotoxicosis. When it occurs, the possibility of additional underlying pathology should be considered.

1 Becker KL, Winnacker JL, Matthews MJ, Higgins GA. Gynecomastia and hyperthyroidism. An endocrine and histological investigation. *J Clin Endocrinol Metab* 1968;**28**:277–85.
2 Ashkar FS, Smoak WM III, Gilson AJ, Miller R. Gynecomastia and mastoplasia in Graves' disease. *Metabolism* 1970;**19**:946–51.
3 Cheah JS.Gynaecomastia in hyperthyroidism. *Singapore Med J* 1971;**12**:241–3.
4 Muthusamy E. Hyperthyroidism with gynaecomastia, galactorrhoea and periodic paralysis. *Singapore Med J* 1991;**32**:371–2.
5 Tan TT, Ng ML, Wu LL, Khalid BA. Hyperthyroid Graves disease. A 5 year retrospective study. *Med J Malaysia* 1989; **44**:224–30.
6 Nomura K, Suzuki H, Saji M, *et al*. High serum progesterone in hyperthyroid men with Graves' disease. *J Clin Endocrinol Metab* 1988;**66**:230–2.
7 Glass AR. Gynecomastia. *Endocrinol Metab Clin North Am* 1994;**23**:825–37.
8 Chopra IJ, Tulchinsky D. Status of estrogen-androgen balance in hyperthyroid men with Graves' disease. *J Clin Endocrinol Metab* 1974;**38**:269–77.
9 Kidd GS, Glass AR, Vigersky RA. The hypothalamic-pituitary-testicular-axis in thyrotoxicosis. *J Clin Endocrinol Metab* 1979;**48**:798–802.
10 Chopra IJ. Gonadal steroids and gonadotrophins in hyperthyroidism. *Med Clin North Am* 1975;**59**:1109–21.

Lumbar hernia: a rare cause of large bowel obstruction

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Summary
We describe a 70-year-old woman presenting with large bowel obstruction secondary to incarceration of the mid descending colon within a lumbar hernia. This was diagnosed on barium enema and successfully treated surgically.

Keywords: hernia; intestinal obstruction; colon

Lumbar herniation occurs in the region of the flank bounded by the 12th rib, the iliac crest and the erector spinae and external oblique muscle groups.[1] Herniation in this area is uncommon with fewer than 300 cases described in the literature. Strangulation is rare.[2] We describe such a case presenting as distal large bowel obstruction.

Case report

A 70-year-old woman was admitted with a history of absolute constipation for one week, vomiting and vague lower abdominal pain. A long history of constipation was obtained and the patient reported taking several laxative preparations regularly. There was no history of weight loss. Previous operations included bilateral total hip replacements, appendicectomy and three Caesarean sections. The patient was obese with abdominal distension but no tenderness. No abnormality was found on palpation. Bowel sounds were active but not tinkling. No significant biochemical or haematological abnormalities were detected. An initial diagnosis of constipation with secondary obstruction was made. A plain abdominal film (figure 1) showed features of distal large bowel obstruction with no gas or faecal material seen in the sigmoid colon.

The patient was admitted and treated with suppositories and intravenous fluids and a nasogastric tube was inserted. An instant barium enema revealed sigmoid diverticular disease and a loop of mid descending colon lying lateral to the iliac crest. Both ends of the loop communicated with the remainder of descending colon and the appearances were consistent with a hernia through a narrow orifice (figure 2). A laparotomy was performed during which a moderate-sized hernia through the left inferior lumbar triangle was confirmed. This contained an incarcerated portion of descending colon. The bowel was reduced, found to be viable and the hernial orifice repaired. The patient recovered quickly and was discharged after 7 days.

Discussion

The lumbar region is anatomically defined superiorly by the lower border of the 12th rib, inferiorly by the iliac crest, anterolaterally by the posterior border of the external oblique muscle,

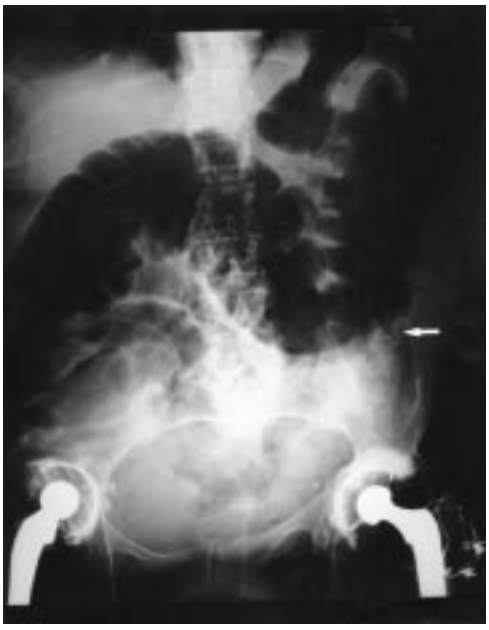

Figure 1 Plain abdominal X-ray demonstrating large bowel obstruction to the mid descending colon (white arrow)

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