Paraneoplastic systemic lupus erythematosus associated with papillary thyroid carcinoma

Introduction

This article reports the case of a woman presenting with systemic lupus erythematosus in whom a papillary thyroid carcinoma was identified. Following thyroid resection there was remission of all clinical signs of the disease and antinuclear antibodies and anti ds-DNA returned to normal levels. This case was interpreted as paraneoplastic systemic lupus erythematosus.

The authors believe this is the first description of paraneoplastic systemic lupus erythematosus associated with papillary thyroid cancer, with complete remission after treatment. Clinicians should be aware of this possible association.

Discussion

At presentation, the patient satisfied five out of 11 American College of Rheumatology criteria for diagnosis of systemic lupus erythematosus (polyarthritis, photosensitivity, oral ulcers, positive antinuclear antibodies and anti ds-DNA antibodies) (Clough, 1984). These all completely disappeared after surgical resection of the papillary thyroid cancer.

Autoimmune paraneoplastic manifestations secondary to papillary carcinoma of the thyroid have been described, including a case of adult-onset Still's disease (Ahn et al, 2010) and polymyositis (Kalliabakos et al, 2008) associated with papillary thyroid cancer. Severe leukocytosis caused by paraneoplastic production of granulocyte colony-stimulating factor by a follicular carcinoma of the thyroid with anaplastic transformation has also been reported (Nakayama et al, 2012).

Furthermore, several paraneoplastic autoimmune manifestations in the course of tumours of non-thyroid origin have been described, including adult-onset Still's disease caused by lung cancer (Wu et al, 2011), dermatomyositis induced by ovarian teratoma (Ibarra et al, 2011), and subacute cutaneous lupus erythematosus (Renner and Sticherling, 2008). The authors found fewer than 20 reported cases in the literature, of which only one had ds-DNA antibody positivity, involving a patient with breast cancer (Renner and Sticherling, 2008). Moreover, in a study of 60 patients with Hodgkin lymphoma and 119 with non-Hodgkin lymphoma, antinuclear antibodies, anti SS-A/anti SS-B and anti PM-Scl positivity were observed in 13.4%, 1.11% and 5.58% respectively; none displayed anti ds-DNA antibodies, and none had symptoms or signs of a connective tissue disease (Altintas et al, 2008). A possible association has been described between lupus-like syndrome and carcinoma of the larynx, breast and lung, but not thyroid cancer. To the authors' knowledge, this is the first description of a paraneoplastic syndrome fully imitating systemic lupus erythematosus, with complete remission of clinical and immunological criteria after tumour removal. **BJHM**

Dr Daniele Sola *is Consultant,* **Dr Pier P Sainaghi** *is Resident and* **Professor Mario Pirisi** *is Director in the Division of Internal Medicine, University Hospital 'Maggiore della Carità', Novara, Italy*

Correspondence to: Dr D Sola (daniele.sola@gmail.com)

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Case Report

A 45-year-old caucasian woman was referred to the authors' tertiary level immune-rheumatology clinic with positive antinuclear antibodies and unexplained fatigue, myalgia, and polyarthralgia with morning stiffness, all present for 4 weeks. Additionally, there was a history of photosensitivity without a discoid or malar rash. The patient recalled recurrent episodes of oral aphthous ulcers and Raynaud's phenomenon in the past few weeks. The patient denied similar episodes in the past, and there was no family history of note. Brain magnetic resonance imaging was normal.

Past medical history was unremarkable, with the exception of β-thalassaemia trait and Hashimoto thyroiditis resulting in hypothyroidism for which levothyroxine supplementation had been started, 6 months before the onset of symptoms. The patient did not complain of headache, dysphagia, dyspnoea, palpitations, fever, weight changes or other constitutional symptoms. On examination, the metacarpophalangeal joints bilaterally and the right wrist were tender and swollen, and Raynaud's phenomenon involving the fingers was present, without acral ulcers. Lung, heart and abdomen were normal. A 1 cm hard nodule, fixed to the thyroid gland, was detected in the right lobe, together with a ipsilateral laterocervical lymph node.

Laboratory testing confirmed antinuclear antibodies to be detectable at high titre with a speckled pattern. Anti-double stranded DNA antibodies (anti ds-DNA) were detected at 165.5 UI/ml (normal =0.0–10.0 UI/ml), antibodies to extractable nuclear antigens, centromere, mitochondria, anti Smith (anti Sm) and actin were not detected. A full blood count was normal as were thyroid, hepatic and renal indices. A screen for HIV, hepatotropic virus and mycobacteria was negative and there was no proteinuria. However, a mild complement reduction was evident: C3 71 mg/dl (normal 90–180 mg/dl), C4 7 mg/dl (normal 10–40 mg/dl). A chest radiograph, pulmonary function testing and echocardiography were normal. Capillaroscopy showed subclinical Raynaud's phenomenon with lupus-like microangiopathy. There was no indication of specific organ involvement, so first level screening tests were also performed: chest X-ray, abdominal ultrasound and mammography were negative.

Thyroid ultrasound demonstrated a focal hypoechoic area of 11 mm at the subcapsular level in the right lobe, with blurred margins, fine calcification within its content, and perinodular and intranodular arterial doppler signal. In light of the suspected thyroid carcinoma, the patient was referred for surgical thyroidectomy; a papillary carcinoma was diagnosed histologically. In the 6 months after surgery, spontaneous resolution of the oral ulcers, photosensitivity and Raynaud's phenomenon was seen: a second capillaroscopy showed regression of microcirculatory abnormalities. More interestingly, complement levels normalized and antinuclear antibody and anti ds-DNA antibody levels returned to normal (*Table 1*).

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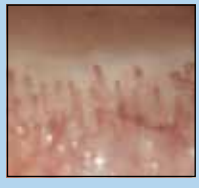
Table 1. Laboratory and clinical features at presentation and during follow up

	At presentation	6 months after surgery	12 months after surgery	Normal reference
Antinuclear antibodies (UI/ml)	6.4	2.1	0.0	(<1.5)
Anti-ds DNA (UI/ml)	143.4	16.0	0.0	0.0–10.0
C3 (mg/dl)	63	83	96	90–140
C4 (mg/dl)	4	14	18	10–40
Oral aphthous ulcers	Yes	No	No	No
Polyarthritis	Yes	No	No	No
Photosensitivity	Yes	No	No	No
Raynaud phenomenon	Yes	No	No	No
Capillaroscopy	Lupus pattern  Alterations of capillary loops, venular visibility and sludging of blood with variable capillary loop length		Normal  Normal	

LEARNING POINTS

- The authors believe this is the first description of systemic lupus erythematosus secondary to a thyroid neoplasia.
- The tumour was totally silent.
- Thyroid cancer should be considered as a possible trigger for paraneoplastic syndrome, especially when systemic lupus erythematosus occurs in individuals at risk for age and sex.

Iliacus pyomyositis

A 47-year-old fit and well woman presented with fever and left hip pain of 1 week's duration. There was no history of trauma, but she had recently been treated for a chest infection. Blood tests showed markedly elevated C-reactive protein levels and erythrocyte sedimentation rate. Magnetic resonance imaging revealed a left iliacus muscle collection (*Figure 1*). Pyomyositis was diagnosed and she was treated with 6 weeks of flucloxacillin. At 8 months follow up the patient remained well and symptom-free.

Pyomyositis of the iliacus is uncommon and is often misdiagnosed. It is most commonly seen in the immunocompromised (Hossain et al, 2000). Causes can be non-specific and include exercise, pre-existing skin conditions or preceding infection. It most often affects the large skeletal muscles (Block et al, 2008) and *Staphylococcus aureus* is most commonly isolated. Magnetic resonance imaging is the gold standard for diagnosis. Pyomyositis should be an important differential diagnosis in patients with hip pain and fever. BJHM

Dr S Boutong *is Core Surgical Trainee (Year 1),* **Miss E Ashby** *is Orthopaedic Specialist Registrar and* **Mr RV Patel** *is Orthopaedic Consultant in the Department of Trauma and Orthopaedics, University College Hospital, London NW1 2BU*

Correspondence to: Dr S Boutong (sboutong@doctors.org.uk)

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Figure 1. Magnetic resonance imaging on day 5 showing diffusely swollen and oedematous left iliacus muscle, with focal rim enhancing fluid collection, measuring 19 x 14 mm.