Goitre: A presenting feature of Acute Myeloid Leukaemia

K Sakamuri[1], J R Flowers[2], R Skinner[1] , T D Cheetham[1]
Dept of Paediatric Endocrine, Great North Children's Hospital, Newcastle-upon-Tyne, U.K[1].
Dept of Paediatrics, Sunderland Royal Hospital, Sunderland, U.K[2].

Introduction:

• Goitre is a common clinical sign in Paediatric Endocrinology.

• The commonest pathological cause of Goitre in adolescence in the UK is autoimmune thyroid disease (ATD) although other potential causes include multinodular goitre and iodine deficiency.

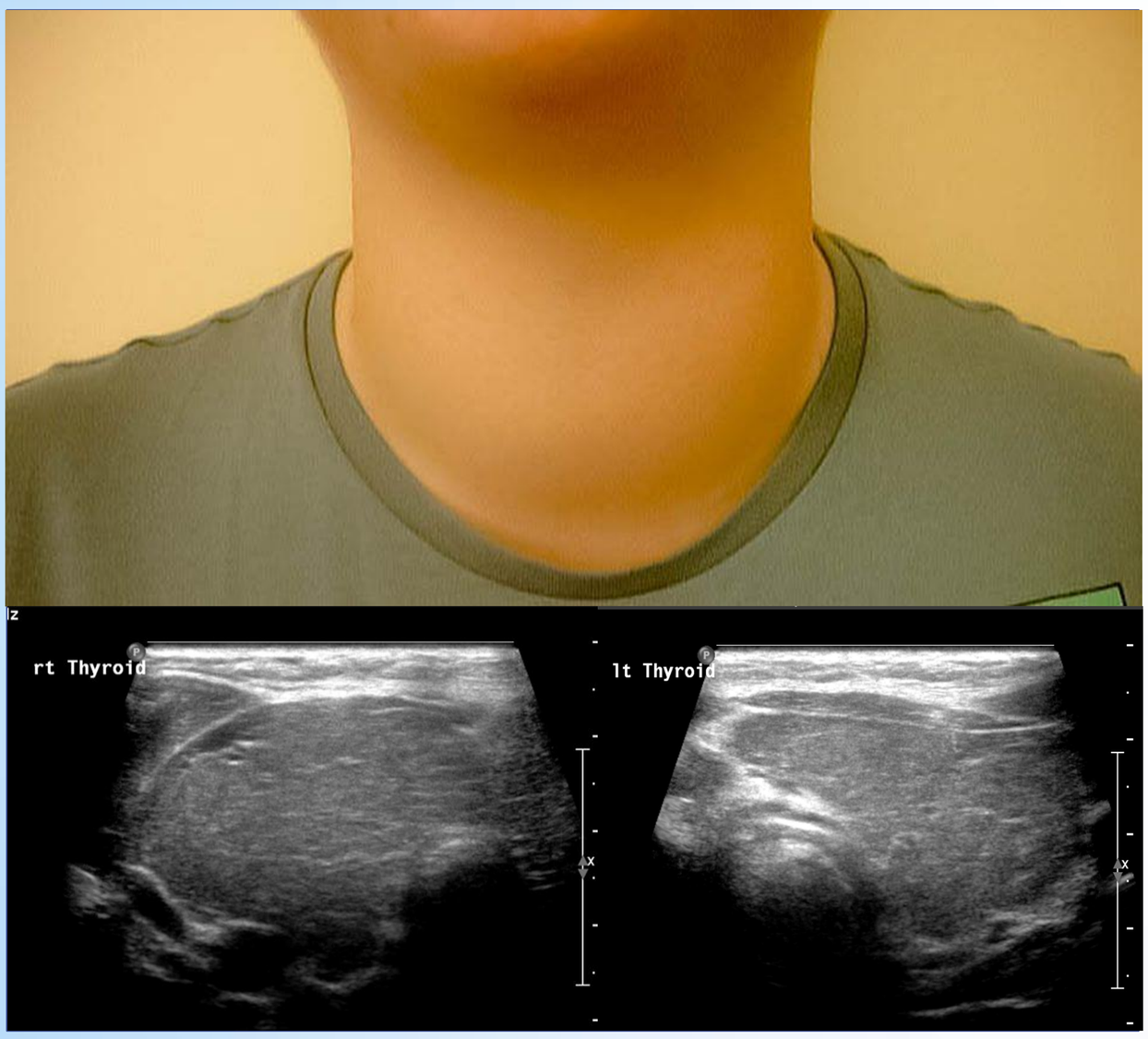
• More than one thyroid pathology can occur in the same person – either by chance or because of a link with the autoimmune process (papillary thyroid cancer in ATD being such an example).

Case Report:

A previously healthy 15yr old male presented as an emergency with a 10 day history of a rapidly enlarging painless neck swelling. He had no breathing difficulty, dysphagia or voice change and was clinically euthyroid. There was a family history of autoimmune thyroid disease (ATD) and Type 1 Diabetes Mellitus. On examination he had a diffuse smooth swelling in the neck that was 10 cm by 6 cm in size. The swelling moved on swallowing and was consistent with a goitre. There was no cervical lymphadenopathy and the rest of the examination was normal.

Investigations revealed a TSH of 76.5mIU/L (RR 0.4-4mIU/L), FreeT4 of 2.2pmol/L (RR12-22pmol/L) with a raised thyroid peroxidase antibody titres (TPO) of 440kU/L (RR 0-34kU/L) suggestive of ATD. Neck ultrasonography confirmed a diffusely enlarged thyroid (figure 1). He was commenced on thyroxine but then represented 4 days later with left calf swelling. Examination showed a swollen, red, tender calf and investigations revealed an abnormal white cell count (> 200 $x10^9$/L) with blast cells on the film.

He was transferred to the oncology team and a bone marrow biopsy confirmed acute myeloid leukaemia. He was treated with chemotherapy and bone marrow transplantation. His thyroid function normalised together with resolution of the goitre within four weeks of starting thyroxine and chemotherapy. The patient is making good progress and remains on thyroxine replacement. The TPO titres are falling and we are planning a trial off thyroxine replacement.



Conclusions:

• Goitre has been reported in AML in adults (1) but not during adolescence to date.

• Rapid resolution of the goitre suggests an effect of chemotherapy rather than thyroxine.

• Intrathyroidal T lymphocytes play an important role in the pathogenesis of ATD through thyroid antigen recognition and mediation of inflammatory effects.

• The presence of thyroid gland enlargement in our patient suggests that myeloid leukaemic cells have the capacity to cross react with thyroid antigens or simply migrate to sites of inflammation.

• Nodular and diffuse thyroid enlargement may reflect an underlying malignant process.

Reference:

[1] Acute myeloid leukemia with infiltration of thyroid gland complicating Hashimoto's thyroiditis. Nakayama S, Yokote T, Kobayashi K, Hirata Y, Hiraiwa T, Akioka T, et al. Endocrine. 2009;36:147–50