

# THYMIC HYPERPLASIA ASSOCIATED WITH GRAVES' DISEASE: COULD THYMIC SURGERY BE DELETERIOUS?

Monica Livia Gheorghiu<sup>1, 2</sup>, Elena Magheran<sup>3</sup>, Teodora Matura<sup>4</sup>, Anda Dumitrascu<sup>1</sup>

<sup>1</sup> "C.I. Parhon" National Institute of Endocrinology, Dept. of Endemic Goiter, Bucharest, Romania

<sup>2</sup> "Carol Davila" University of Medicine and Pharmacy, Endocrinology, Bucharest, Romania

<sup>3</sup> "M. Nasta" Institute for Pneumology, Dept. of Pathology, Bucharest, Romania

<sup>4</sup> "Center for Medical Diagnosis and Treatment Roma", Bucharest, Romania

## INTRODUCTION

➤ **Thymic hyperplasia** is frequent (38% of cases) in patients with Graves' disease<sup>1</sup> (GD) but it rarely is large enough to be detected radiologically as an anterior mediastinal mass<sup>1,2</sup>. In the few operated cases, **lymphoid hyperplasia** (i.e. lymphoid follicle proliferation with expansion of both the cortical and the medullary thymus component) has been documented histologically in most of the cases, while **true thymic hyperplasia**, i.e. thymic enlargement with normal tissular architecture, was found more rarely. In only 4 out of 107 patients with GD and thymic enlargement a **malignant tumor** was reported (thymoma or lymphoma/leukemia)<sup>3</sup>.

➤ The **mechanisms** of this association remain unclear, both **autoimmunity**<sup>4,5</sup> and **hyperthyroidism**<sup>6</sup> being a potential cause. The thyrotropin receptor has been identified in the thymus<sup>4</sup> and may be stimulated by the TSH-receptor antibodies<sup>5</sup>. Hyperthyroidism persists after thymectomy but the treatment of hyperthyroidism with antithyroid drugs usually results in a decrease of the thymus over 3-6 months<sup>1,7</sup>.

## OBJECTIVE

To describe the evolution of 3 patients with GD and thymic enlargement detected incidentally on CT scan.

## RESULTS

In 2 patients, a 49 years old female and a 28 years old male, the thymic mass (3.3/1.6 cm and 5.5/ 2.5 cm, respectively) shrank to normal after 4 and 6 months of treatment with methimazole (MTZ). In a 37 years old female, the thymic mass 4.8/3.7 cm persisted after 5 months of MTZ and was operated.

## PATIENT 2, male, 28 years old

Known with complete *situs inversus*, diagnosed with GD, bilateral mild exophthalmos and thymic hypertrophy occupying all the thymic lodge (CT done for persistent cough).

At diagnosis, serum TSH = 0 mIU/L, fT4 = 3.99 ng/dL, T3 = 6.65 ng/mL, TRAB = 40 IU/L and TPOAb >1000 IU/mL. Treated with methimazole (40 mg/day initially) and oral methylprednisolone. After 4 months of MTZ and 2 months of oral methylprednisolone in progressively lowered doses, there was a significant shrinkage of the thymus mass from 5.58/2.55/4.48 (Fig.1) to 1.3/2.9/2.9 cm (Fig 2).

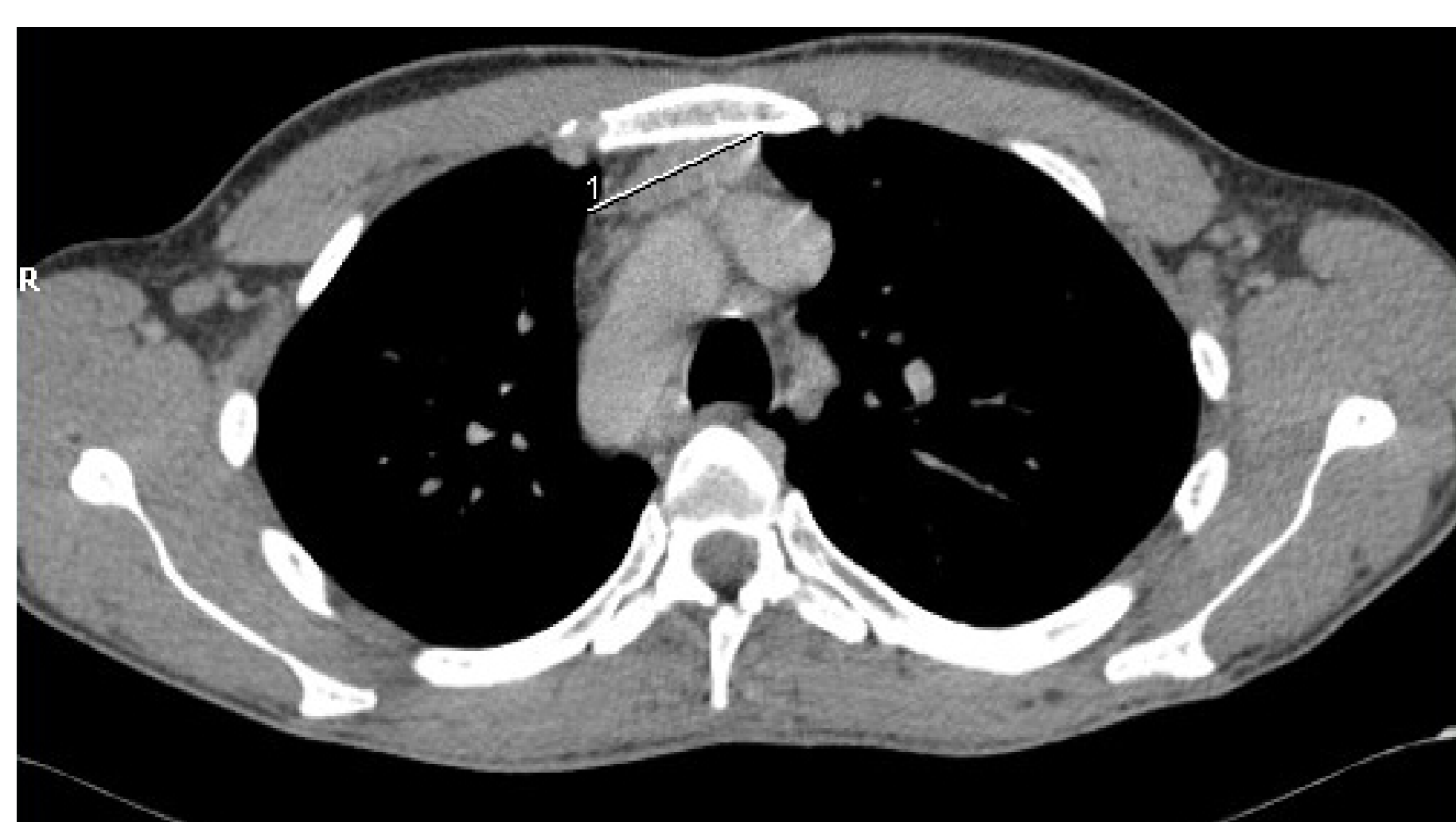


Fig. 1. CT image of well-contoured, homogenous thymus mass at the time of the diagnosis, interpreted as hyperplasia; CT was made for persistent cough.

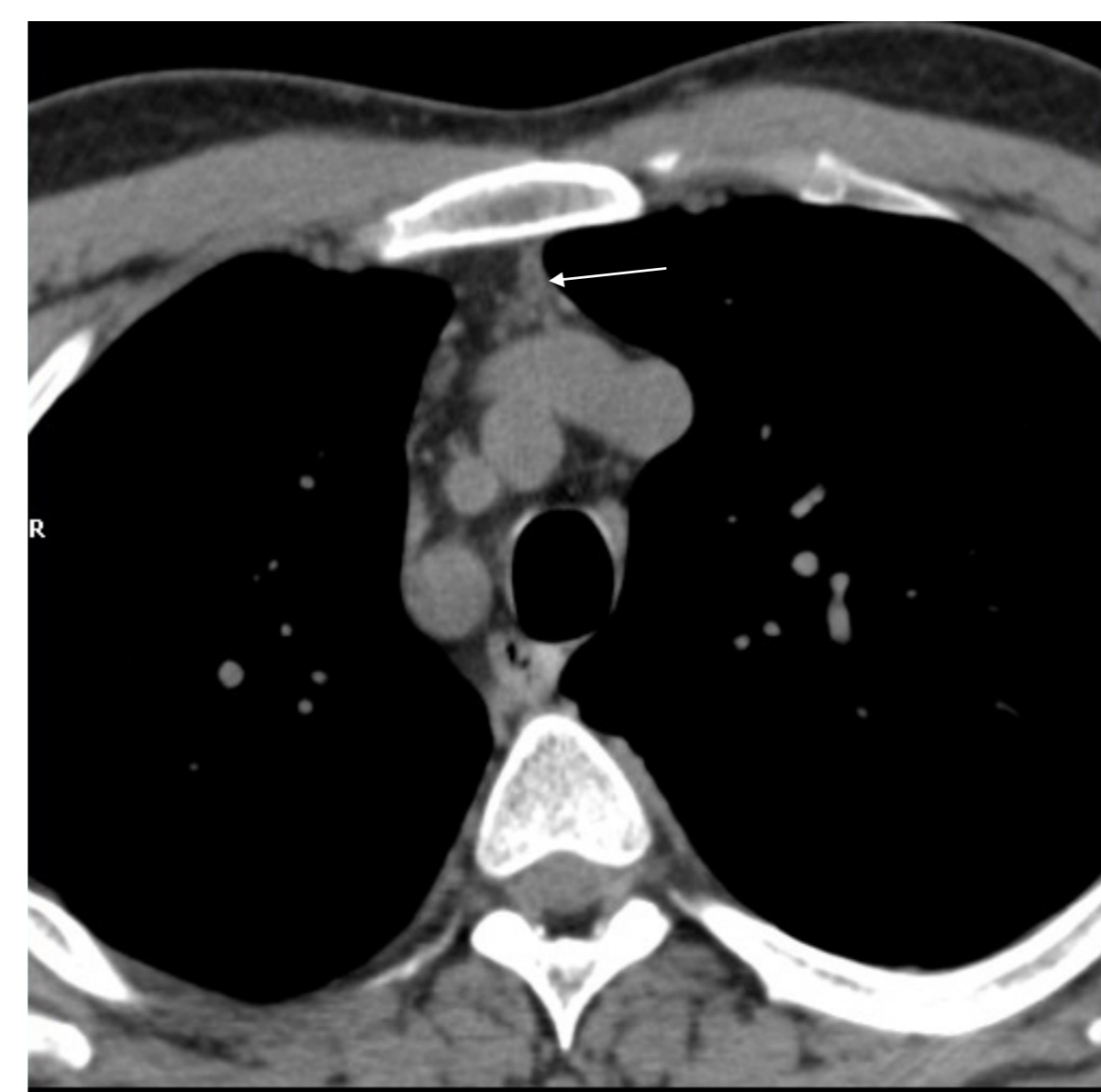


Fig. 2. CT image after 4 months of MTZ: shrinkage of the thymus mass.

## PATIENT 3, female, 37 years old

GD in **Apr 2014** (TSH=0,005 mmol/L, fT4=1,9 ug/dL (N=0.9-1.71), TPOAb 107,8 UI/mL (N<34), small goiter, no exophthalmos, treated with 5-10 mg/day MTZ until Sep 2014 (when still hyperthyroid), then 15 mg/d, thyroid hormones normalized in Nov 2014.

**July 2014** - pneumonia, CT: homogenous thymic mass 4.8/3.7 cm, lymph nodes in mediastinum, R hilum and axillae (Fig 3).

**Dec 2014** CT: homogenous stable thymic mass 3.1/4.1/3.9 cm (Fig 4), stable lymph nodes in the axillae.

Fig 3. July

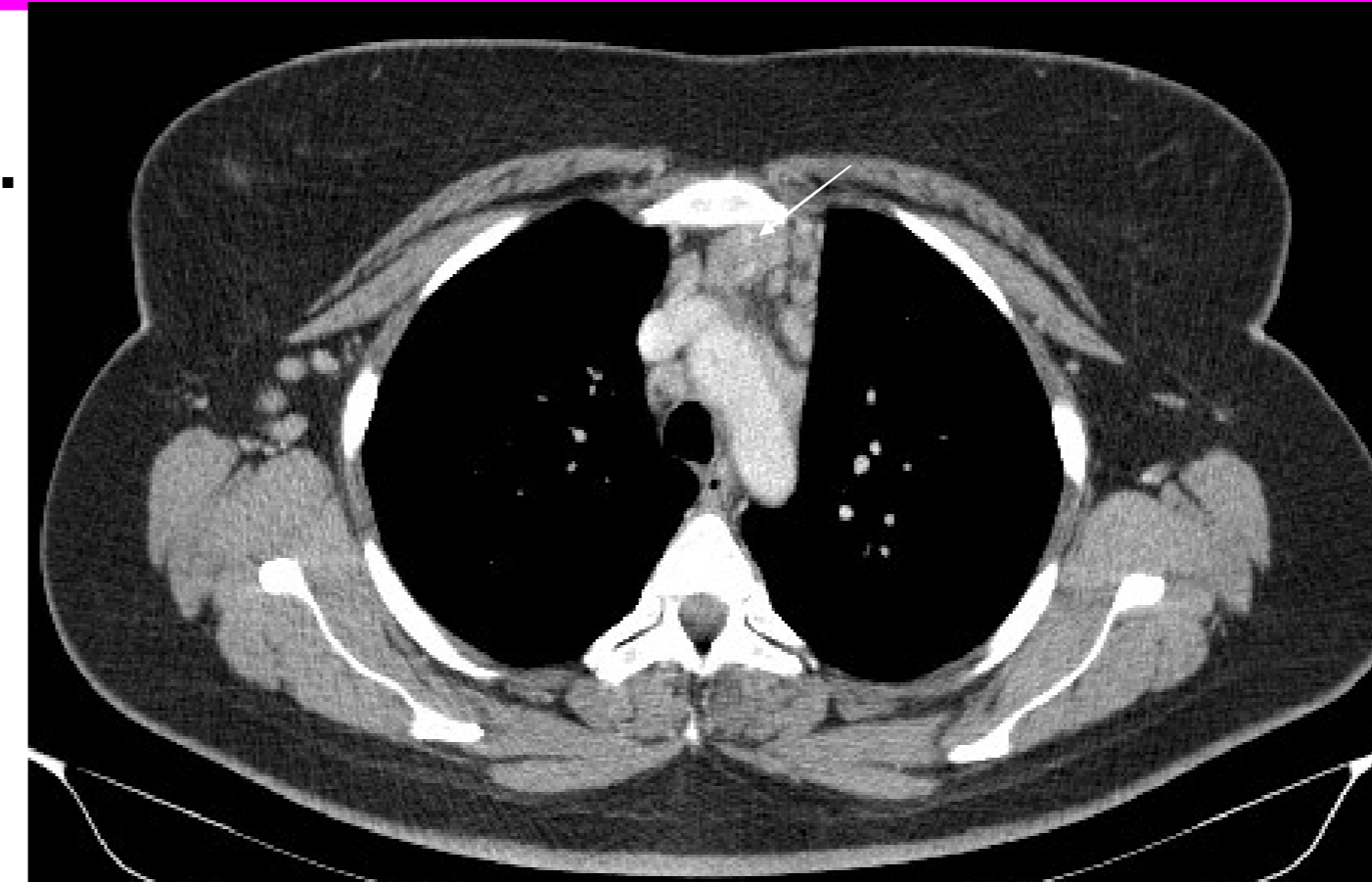
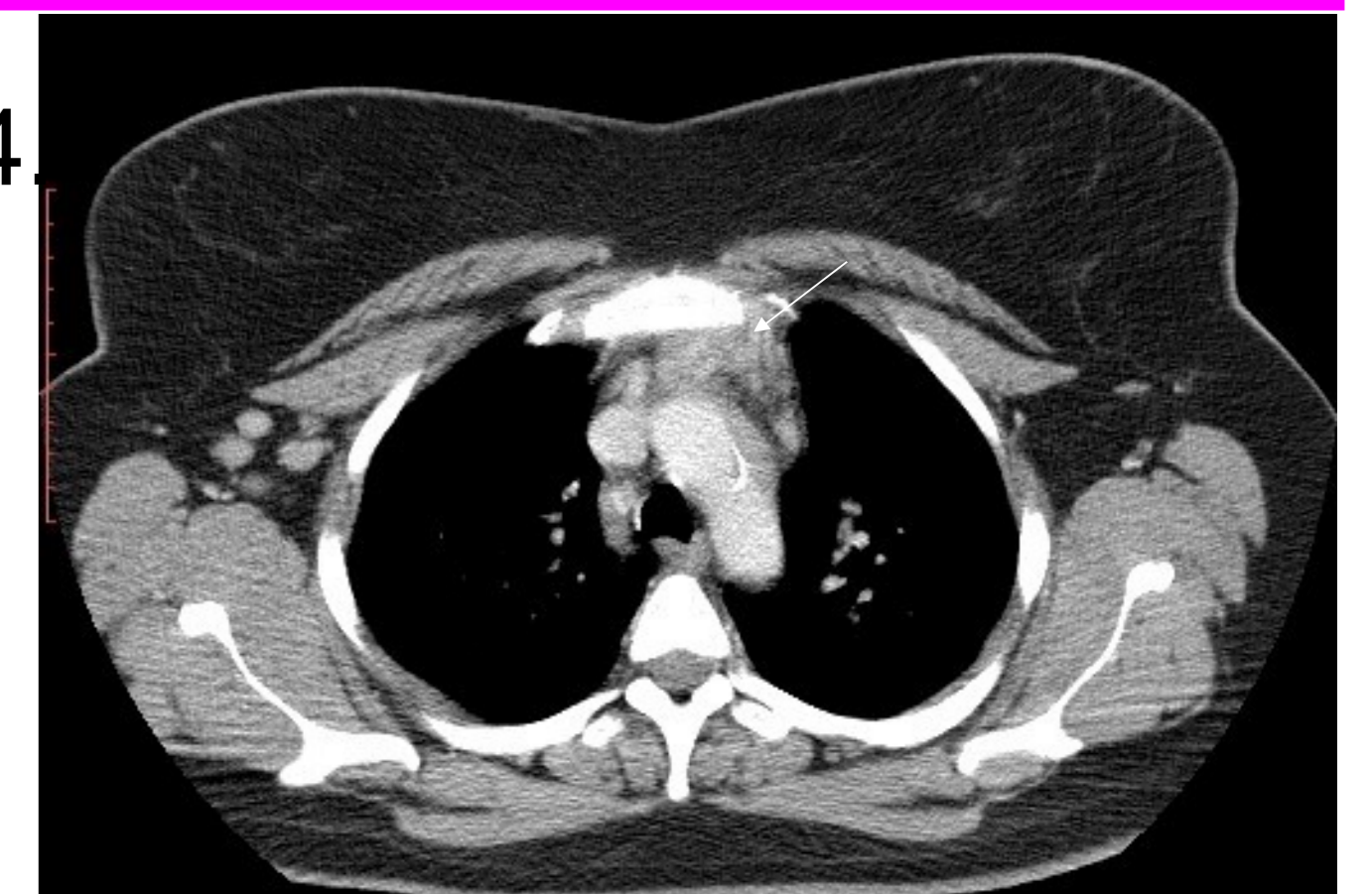


Fig 4. Dec



**Thymic surgery, suspected thymoma HP = lymphoid hyperplasia (Fig 5)**

After 2 months: **myasthenia gravis**

with frequent decompensations

After 1 year: GD remission, **seronegative rheumatoid arthritis**

After 2 years: **systemic lupus eritematosus**

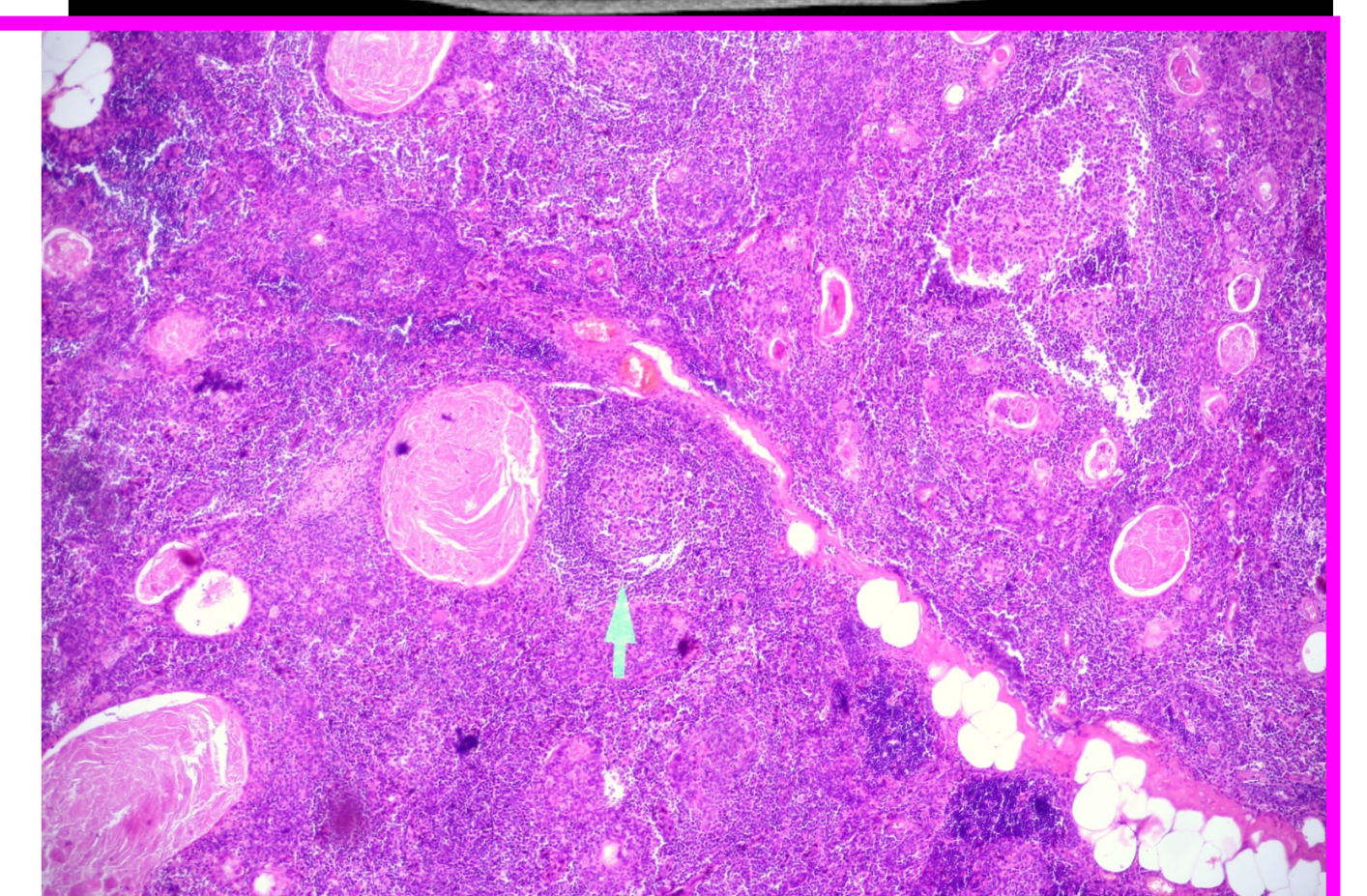


Fig 5. HE 10x, arrow: lymphoid follicle with active germinal center

## CONCLUSIONS

✓ When a thymic mass is radiologically detected in association with Graves' disease, in the absence of myasthenia gravis and/or suspect CT findings (as nonhomogeneity, invasion in the surrounding tissues, calcification, septum, cystic lesion), it usually is thymic hyperplasia.

✓ Only antithyroid treatment and radiological follow-up are usually necessary.

✓ By recognizing the association between thymic hyperplasia and GD and the benign course of thymic hypertrophy after hyperthyroidism treatment, a major surgical procedure for a thymus mass, with potential risks, can be avoided.

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