

Intrathyroid lymph node tissue in multinodular goiter in an Egyptian female

Asmaa G. Abdou, MSc, MD, Hayam A. Aiad, MSc, MD.

ABSTRACT

نستعرض في هذا التقرير وجود أنسجة ليمفاوية في أحد السيدات المصابات بتضخم الغدة الدرقية، وتبلغ من العمر 40 عاماً. وكان هناك مصادفة أثناء الفحص المجهرى للغدة الدرقية المستأصلة، وهي وجود هذه الأنسجة الليمفاوية محاطة بنسيج الغدة الدرقية، وربما يكون لذلك علاقة بحدوث تغيير في التوزيع الطبيعي للغدة الليمفاوية الموجودة في الرقبة، أو ربما يفسر بنظرية وجود أنسجة غريبة داخل نسيج الغدة الدرقية.

We report a case of an incidental finding of intrathyroid lymph node tissue in a 40-year-old Egyptian female presenting with multinodular goiter. Collections of lymphoid tissue surrounded by capsule and mature fat cells were seen enclosed by normal thyroid follicles. Heteroplasia or deviation of the normal anatomy of the cervical lymph node groups may explain the presence of this lymphoid tissue.

Saudi Med J 2009; Vol. 30 (4): 558-560

From the Department of Pathology, Faculty of Medicine, Menofiya University, Shebein Elkom, Egypt.

Received 25th October 2008. Accepted 28th January 2009.

Address correspondence and reprint request to: Dr. Asmaa G. Abdou, Department of Pathology, Faculty of Medicine, Menofiya University, Shebein Elkom, Egypt. Tel. +2 (048) 2282939/2282137. Fax. +2 (048) 2233521. E-mail: asmaa_elsaidy@yahoo.com

The development of lymphoid organs can be viewed as a continuum, since lymph nodes and spleen represent secondary lymphoid organs. Cellular accumulation arising during chronic inflammation represents ectopic or tertiary lymphoid organs that develop by the process of lymphoid neogenesis. Genetic preprogramming and pre-patterning affect the development of secondary lymphoid organs, whereas various environmental factors influence the development of tertiary lymphoid organs, that are not restricted to specific developmental

or anatomical locations.¹ Ectopic lymphoid follicles, with or without germinal center formations were seen in many conditions and different locations, as in an autoimmune thyroid disease (Hashimoto's thyroiditis),² in salivary glands of patients with Sjögren's syndrome,³ in the thymus of patients with Myasthenia gravis⁴ and in the synovial membrane of patients with rheumatoid arthritis.⁵ Beside autoimmune syndromes, chronic infections such as *Helicobacter pylori*⁶ and hepatitis C⁶ can also be associated with the formation of ectopic lymphoid follicles. Armengol et al⁷ reported the structural characteristics and functional competence of the ectopic germinal centers in autoimmune thyroid diseases. By immunohistochemistry, they had viewed the intrathyroid ectopic lymphoid follicles as analogs of follicular structures found in secondary lymphoid tissues, and could be positive to the 2 major thyroid autoantigens (thyroglobulin and thyroidal peroxidase). The present study describes a rare case of intrathyroid lymph node to explain its origin, and the significance of its presence.

Case Report. A 40-year-old woman presented with slowly growing thyroid swelling with subsequent cosmetic and compression complaints. She had a history of right hemithyroidectomy with an occult papillary microcarcinoma 4 years ago. Sonographic picture was that of an enlarged left thyroid lobe with multi-nodularity. She underwent left subtotal hemithyroidectomy. The received specimen was a left thyroid lobe measuring 3x2x1 cm with nodular surface, and cut section showed brownish fleshy nodules. Microscopically, 3 lymphoid microstructures surrounded by capsule and embedded in mature fat cells were seen (Figures 1 & 2). The largest 2 of those lymphoid microstructures showed inactivated primary lymphoid follicles formation containing aggregate of resting lymphocytes (Figure 2). No encroachment on the surrounding thyroid follicles that appeared completely intact, excluding the possibility of Hashimoto thyroiditis.² The surrounding thyroid

tissue exhibited the picture of nodular hyperplasia (multinodular goiter).

Discussion. The evolutionary association between thyroid gland and lymph node was recalled. The presence of thyroid tissue in lymph node was reported in the literature as a type of epithelial like inclusion.⁸ However, to our knowledge, no report mentioned the presence of intrathyroid lymph node as a part of cervical lymph node group, similar to that commonly seen in the parotid gland. The presence of this lymph node in our case could be explained by an aberrant differentiation of local tissue that is, a heteroplasia, which means different in Greek. Many reports showed the presence of heterotopic tissues in the thyroid gland

as salivary gland tissue,⁹ ectopic parathyroid,¹⁰ and lipomatous lesions.¹¹

On the other hand, the ectopic thyroid tissue is a more common event, which is mostly seen in the midline along the pathway of the thyroglossal duct. In such situations, ectopic thyroid tissue may be present in addition to the normal thyroid gland, or the ectopic tissue may be the only thyroid gland present. Ectopic thyroid tissue was described in many locations including parotid salivary gland¹² and submandibular region.¹³ The question is, could this lymph nodal microstructure be just some kind of lymphocytic infiltrate, like that seen in multinodular goiter as a reflection of an immunologic response?¹⁴ But, the process could not be simply lymphocytic infiltrate, as it is a well-defined lymphoid microstructure surrounded by a capsule, and embedded in mature fat. Also, it could not be an autoimmune Hashimoto thyroiditis,² as the aggregate is localized neither diffusely infiltrating, nor destroying the surrounding thyroid tissue. So, we claim that our case represents true lymph node structure embedded deeply in the thyroid gland. By reviewing the literature, our report may be the first one mentioning this observation. Co-parallel with intraparotid lymph node, the significance of our finding focused on that any pathology could affect this lymph node primarily will lead to an enlargement of the thyroid gland subsequently, whereas no parenchymatous lesion will be found in the thyroid itself. Castleman's disease,¹⁵ for example had been reported in the parotid originating from the intraparotid lymph node. Furthermore, the involvement of lymph node with metastasis either originating from the adjacent thyroid or elsewhere could raise the anatomical and oncological importance of these lymph nodes. Moreover, the interpretation of lymphocytic aspirate of FNAC of the thyroid, which is a common practice, could be wrongly directed towards thyroiditis or even lymphoma. So the alertness of the presence of this group of lymph node could be important, however, more cases need to be detected.

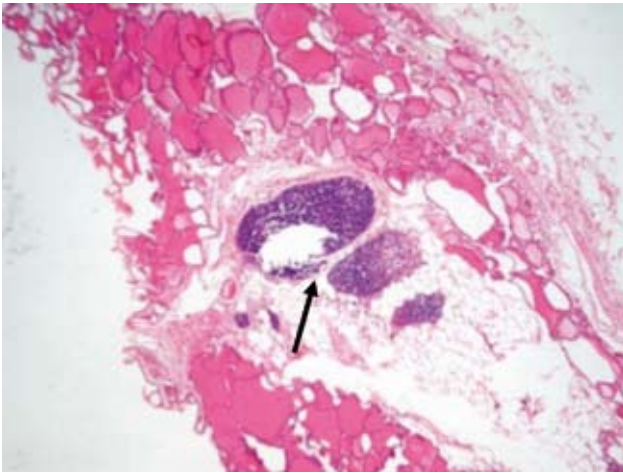


Figure 1 - The intrathyroid lymphoid microstructures (arrow) (Hematoxylin and Eosin x100).

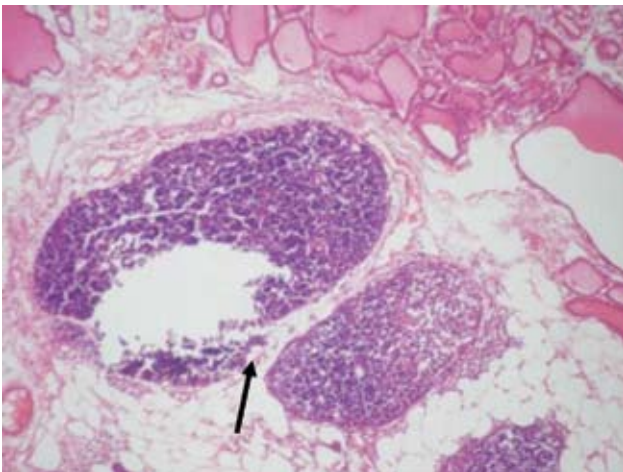


Figure 2 - High power of the previous slide showing complete capsulation of the lymphoid microstructures (arrow), which are embedded in mature fat cells, and surrounded by normal thyroid tissue (Hematoxylin and Eosin x200)

References

1. Drayton DL, Liao S, Mounzer RH, Ruddle NH. Lymphoid organ development: from ontogeny to neogenesis. *Nat Immunol* 2006; 7: 344-353.
2. Chistiakov DA. Immunogenetics of Hashimoto's thyroiditis. *J Autoimmune Dis* 2005; 2: 1.
3. Harris NL. Lymphoid proliferations of the salivary glands. *Am J Clin Pathol* 1999; 111: 94-103.
4. Shiono H, Fujii Y, Okumura M, Takeuchi Y, Inoue M, Matsuda H. Failure to down-regulate Bcl-2 protein in thymic germinal center B cells in myasthenia gravis. *Eur J Immunol* 1997; 27: 805-809.

5. Itoh K, Meffre E, Albesiano E, Farber A, Dines D, Stein P, et al. Immunoglobulin heavy chain variable region gene replacement as a mechanism for receptor revision in rheumatoid arthritis synovial tissue B lymphocytes. *J Exp Med* 2000; 192: 1151- 1164.
6. Mazzucchelli L, Blaser A, Kappeler A, Schärli P, Laissue JA, Baggolini M, et al. BCA-1 is highly expressed in Helicobacter pylori-induced mucosa-associated lymphoid tissue and gastric lymphoma. *J Clin Invest* 1999; 104: 49- 54.
7. Armengol MP, Juan M, Lucas-Martin A, Fernández-Figueras MT, Jaraquemada D, Gallart T, et al. Thyroid autoimmune disease: demonstration of thyroid-antigen specific B cells and recombination-activating gene expression in chemokine-containing intrathyroidal active germinal centers. *Am J Pathol* 2001; 159: 861 -873.
8. León X, Sancho FJ, García J, Sañudo JR, Orús C, Quer M. Incidence and significance of clinically unsuspected thyroid tissue in lymph nodes found during neck dissection in head and neck carcinoma patients. *Laryngoscope* 2005; 115: 470-474.
9. Park JY, Kim GY, Suh YL. Intrathyroidal branchial cleft-like cyst with heterotopic salivary gland-type tissue. *Pediatr Dev Pathol* 2004; 7: 262-267.
10. Lignitz S, Musholt TJ, Kreft A, Engel R, Brzezinska R, Pohlenz J. Intrathyroidal thymic tissue surrounding an intrathyroidal parathyroid gland, the cause of a solitary thyroid nodule in a 6-year-old boy. *Thyroid* 2008; 18: 1125-1130.
11. Soda G, Baiocchini A, Nardoni S, Bosco D, Melis M. Benign tumors of heterotopic tissue in the thyroid gland: a report of two cases of lipomatous lesions. *J Exp Clin Cancer Res* 2000; 19: 245-248.
12. Mysorekar V V, Dandekar C P, Sreevathsa M R. Ectopic thyroid tissue in the parotid salivary gland. *Singapore Med J* 2004; 45: 437- 439.
13. Zieren J, Paul M, Scharfenberg M, Menenakos C. Submandibular ectopic thyroid gland. *J Craniofac Surg* 2006; 17: 1194-1198.
14. Kareim Z, Glaser B, Yigla M, Pauker J, Sadeh O, Sheinfeld M. Toxic multinodular goiter: a variant of autoimmune hyperthyroidism. *J Clin Endocrinol Meta* 1987; 65: 659- 664.
15. Erdogan F, Altas S, Altas E, Yoruk O, Ozmen SA. A rare location of Castleman's disease: parotid region. *N Z Med J* 2008; 121: 86-90.

Illustrations, Figures, Photographs

Four copies of all figures or photographs should be included with the submitted manuscript. Figures submitted electronically should be in JPEG or TIFF format with a 300 dpi minimum resolution and in grayscale or CMYK (not RGB). Printed submissions should be on high-contrast glossy paper, and must be unmounted and untrimmed, with a preferred size between 4 x 5 inches and 5 x 7 inches (10 x 13 cm and 13 x 18 cm). The figure number, name of first author and an arrow indicating "top" should be typed on a gummed label and affixed to the back of each illustration. If arrows are used these should appear in a different color to the background color. Titles and detailed explanations belong in the legends, which should be submitted on a separate sheet, and not on the illustrations themselves. Written informed consent for publication must accompany any photograph in which the subject can be identified. Written copyright permission, from the publishers, must accompany any illustration that has been previously published. Photographs will be accepted at the discretion of the Editorial Board.