

medical therapy, the final treatment consists in the surgical excision of the tumor.

Surgery is the mainstay of treatment, based on the general principle of complete resection with preservation of as much normal lung tissue as possible. The treatment of choice for carcinoid tumors remains surgery and consists of a lobectomy supplemented by lymph node dissection.⁹

References

1. Sayeg Y, Sayeg M, Baum RP, Kulkarni HR, Presselt N, Mäder I, et al. Neuroendokrine Neoplasien der Lunge. *Pneumologie*. 2014;68:456–77.
2. Koopmans KP, de Vries EG, Kema IP, Elsinga PH, Neels OC, Sluiter WJ, et al. Staging of carcinoid tumours with 18F-DOPA PET: a prospective, diagnostic accuracy study. *Lancet Oncol*. 2006;7:728–34.
3. Binderup T, Knigge U, Loft A, Mortensen J, Pfeifer A, Federspiel B, et al. Functional imaging of neuroendocrine tumors: a head-to-head comparison of somatostatin receptor scintigraphy, 123I-MIBG scintigraphy, and 18F-FDG PET. *J Nucl Med*. 2010;51:704–12.
4. Lin JH, Yen RF, Hung GU, Chieng PU, Kao CH. Pulmonary carcinoid tumor on fluorine-18-FDG PET imaging. *Ann Nucl Med Sci*. 2000;13:67–70.
5. Yakemchuk VN, Jager PL, Chirakal R, Reid R, Major P, Gulenchyn KY. PET/CT using 18F-FDOPA provides improved staging of carcinoid tumor patients in a Canadian setting. *Nucl Med Commun*. 2012;33:322–30.
6. Nanni C, Fanti S, Rubello D. 18F-DOPA PET and PET/CT. *J Nucl Med*. 2007;48:1577–9.
7. Santhanam P, Taïeb D. Role of 18F-DOPA PET/CT imaging in endocrinology. *Clin Endocrinol*. 2010;81:789–98.
8. Balogova S, Talbot JN, Nataf V, Michaud L, Huchet V, Kerrou K, et al. 18F-fluorodihydroxyphenylalanine vs other radiopharmaceuticals for imaging neuroendocrine tumours according to their type. *Eur J Nucl Med Mol Imaging*. 2013;40:943–66.
9. Noel-Savina E, Descourt R. Focus on treatment of lung carcinoid tumor. *Onco Targets Ther*. 2013;6:1533–7.

Irene Acevedo-Báñez^a, Juan Luis Tirado-Hospital^a, Ovidio Muñoz-Grijalvo^b, Miguel Angel Mangas-Cruz^c, Francisco Javier García-Gómez^{a,*}

^a Department of Nuclear Medicine, Virgen del Rocío University Hospital, Seville, Spain

^b Department of Internal Medicine, Virgen del Rocío University Hospital, Seville, Spain

^c Department of Endocrinology, Virgen del Rocío University Hospital, Seville, Spain

* Corresponding author.

E-mail address: javier191185@gmail.com (F.J. García-Gómez).

Lactococcus lactis thyroid abscess in an immunocompetent patient[☆]



Absceso tiroideo por *Lactococcus lactis* en paciente inmunocompetente

Case report

Acute suppurative thyroiditis (AST) is an uncommon, potentially serious disease occurring mainly in children. The low prevalence of thyroid abscess is related to thyroid gland resistance to infection due to its fibrous capsule, high blood perfusion, high iodine contents, and significant lymphatic drainage, and to anatomical separation of the gland from the airway.¹

AST may arise from hematogenous or lymphatic dissemination, continuity from adjacent organs, or direct inoculation after fine needle aspiration (FNA).² The predisposing factors vary depending on age at presentation. In children, the most common predisposing factor is a pyriform sinus fistula (PSF), which is due to the abnormal development of the third or fourth branchial arch. The condition occurs on the left side in 87–95% of cases. This is explained by the asymmetry of the fourth branchial arch.^{3,4} PSF is

uncommon in adults, in whom other factors such as prior thyroid disease (Hashimoto's thyroiditis, differentiated thyroid cancer, multinodular goiter) and immunosuppression, which promotes in turn infection by uncommon microorganisms, are more relevant.⁵

We report the case of a 17-year-old female patient with a history of anorexia nervosa who attended the emergency room for fever, pain in the anterior aspect of the neck, and increased size of the left thyroid space. Subacute thyroiditis was clinically suspected, and anti-inflammatory treatment (ibuprofen 600 mg/8 h) was started. Six days later the patient returned to the emergency room reporting no improvement. Prednisone (30 mg/24 h) was therefore added in a tapering scheme, and the patient was referred to the endocrinology department due to the persistence of the condition.

Physical examination revealed left thyroid lobe enlargement with pain and a palpated mass and increased temperature.

Laboratory tests results included: leukocytosis (WBC: 13,500 mm⁻³, with 79.3% neutrophils) with elevated acute phase reactants (C-reactive protein: 108.40 mg/L) (range: 0.1–10.0) and ESR: 122.00 mm (range: 0.0–25.0) with normal thyroid function (TSH: 1.97 μIU/mL) (range: 0.35–5.0), free T4 1.40 ng/dL (range: 0.7–1.98) and free T3 2.54 pg/mL (range: 2.3–4.2) and negative thyroid autoimmunity.

A thyroid ultrasound examination showed three hypoechogenic collections suggesting thyroid abscess. A culture of purulent material collected by FNA revealed the presence of penicillin-sensitive *Lactococcus lactis*. Blood cultures were negative. Barium esophagogram revealed a fistula in the left

[☆] Please cite this article as: Campos R, Pérez B, Armengod L, Muñoz E, Ramos A. Absceso tiroideo por *Lactococcus lactis* en paciente inmunocompetente. *Endocrinol Nutr*. 2015;62:204–206.

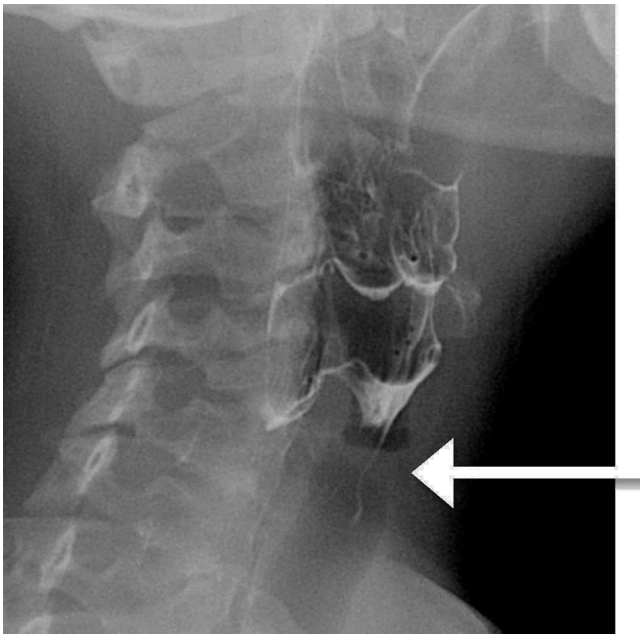


Figure 1 Barium X-ray examination showing a fistula tract from the hypopharynx to the thyroid gland.

pyriform sinus which ended close to the thyroid gland (Fig. 1) and was subsequently confirmed in computed tomography of the neck.

The patient was treated with amoxicillin 2 g/6 h by the intravenous route for two weeks, resulting in the disappearance of pain and fever and progressive thyroid size decrease. Surgical drainage was therefore not considered. After resolution of the infection, the patient underwent elective exploratory cervicotomy, which could not show the fistulous tract, but allowed for the resection of the upper third of the left thyroid lobe. Pathological examination showed fibrosis and peripheral vascular congestion in thyroid parenchyma.

The patient has remained symptom-free, with preserved thyroid function and no recurrent thyroid infection, during 10 months of follow-up.

A diagnosis of AST should be suspected in patients with sudden, severe pain in the anterior neck which worsens on hyperextension, associated with an increased size of the thyroid space. Erythema and increased local temperature, as well as fever, dysphagia, or dysphonia, may also be found.¹ Laboratory tests usually show leukocytosis and increased levels of acute phase reactants. Thyroid function is normal in 93% of cases.⁶

Thyroid ultrasound allows the thyroid abscess to be visualized, revealing it as a heterogeneous and hypoechoic lesion. As regards the diagnosis of PSF, laryngoscopy is considered by some authors to be the imaging procedure of choice.¹ Other authors, however, think that a barium esophagogram or a CT scan "under trumpet maneuver", i.e. using air as a contrast agent, represent the best procedures.⁷ These procedures provide the best results when performed at least 15 days after the resolution of the acute condition because the presence of the abscess may obliterate the fistula tract and cause a false negative result.⁴ Active search for PSF is mandatory in children with recurrent AST and recommended in all other cases.

Microbiological diagnosis is usually made based on the culture of material collected by FNA from the abscess. AST is usually caused by aerobic bacteria,¹ but cases due to other microorganisms such as fungi or mycobacteria have also been reported.⁸ In our patient, the pathogen isolated from culture was *Lactococcus lactis*, which has never been reported to date as a microorganism responsible for thyroid abscess. It is a Gram-positive, facultative anaerobic coccus which is found as a part of human saprophytic flora and rarely causes disease. In a recent article, only 20 cases of abscesses related with this pathogen occurring in various locations (brain, liver, endocardium, lung) were reported.⁹ The most relevant risk factor for the infection included tooth decay, immunosuppression, and the consumption of non-pasteurized milk. None of these factors were found in our patient. As this is a poorly virulent microorganism that colonizes the gastrointestinal tract, it cannot be completely ruled out that it is a contaminant. However, there are reasons for considering it to be a true pathogen, including the fact that abscesses have been reported in other locations, that this was the only microorganism isolated, and that the sample was taken by percutaneous puncture, rather than from the aerodigestive tract.

Although it cannot be ruled out that vomiting related to the anorexia nervosa suffered by the patient could have facilitated the passage of food remains through the pre-existing fistula tract, this appears unlikely, as the patient denied any purgative behavior at that time. In addition, recurrent acute tonsillitis and retropharyngeal abscesses have been reported as complications of anorexia nervosa,¹⁰ but there is no evidence in the literature relating AST and eating disorders.

AST should be treated early with intravenous broad spectrum antibiotic therapy adequately covering *Staphylococcus aureus* and *Streptococcus pyogenes*.¹ Surgical drainage of the abscess should be performed when a fluctuating abscess visible in the ultrasound examination exists. In patients in whom PSF is found, the fistula should be closed to prevent recurrence.⁶

In conclusion, it should be noted that this case was unique not only because AST is an uncommon condition in immunocompetent adults, but because it was caused by *Lactococcus lactis*, a microorganism which rarely causes disease.

Conflicts of interest

The authors state that they have no conflicts of interest.

References

1. Paes JE, Burman KD, Cohen J, Franklyn J, McHenry CR, Shoham S, et al. Acute bacterial suppurative thyroiditis: a clinical review and expert opinion. *Thyroid*. 2010;20:247–55. <http://dx.doi.org/10.1089/thy.2008.0146>.
2. Nishihara E, Miyauchi A, Matsuzuka F, Sasaki I, Ohye H, Kubota S, et al. Acute suppurative thyroiditis after fine-needle aspiration causing thyrotoxicosis. *Thyroid*. 2005;15:1183–7. <http://dx.doi.org/10.1089/thy.2005.15.1183>.
3. Thomas B, Shroff M, Forte V, Blaser S, James A. Revisiting imaging features and the embryologic basis of third and fourth branchial anomalies. *AJNR Am J Neuroradiol*. 2010;31:755–60. <http://dx.doi.org/10.3174/ajnr.A1902>.

4. Bustos-calixto A, Legorreta-soberanis J, Cruz-mendoza MG. Tiroiditis aguda supurativa secundaria a fístula del seno piri-forme. *Rev Endocrinol Nutr.* 2011;19:31–4.
5. Pearce EN, Farwell AP, Braverman LE. Thyroiditis. *N Engl J Med.* 2003;348:2646–55.
6. Brook I. Suppurative thyroiditis in children and adolescents. Up To Date; 2014. Available from: <http://www.uptodate.com/contents/suppurative-thyroiditis-in-children-and-adolescents> [consulted March 2014].
7. Miyauchi A. Thyroid gland: a new management algorithm for acute suppurative thyroiditis? *Nat Rev Endocrinol.* 2010;6:424–6.
8. Majid U, Islam N. Thyroid tuberculosis: a case series and a review of the literature. *J Thyroid Res.* 2011;359864, <http://dx.doi.org/10.4061/2011/359864>.
9. Inoue M, Saito A, Kon H, Uchida H, Koyama S, Haryu S, et al. Subdural empyema due to *Lactococcus lactis* cremoris: case report. *Neurol Med Chir.* 2014;54:341–7, <http://dx.doi.org/10.2176/nmc.cr2012-0440>.
10. Bannister M. Tonsillitis caused by vomiting in a patient with bulimia nervosa: a case report and literature review. *Case Rep Otolaryngol.* 2013;251629, <http://dx.doi.org/10.1155/2013/251629>.

Rocío Campos^{a,*}, Beatriz Pérez^a, Laura Armengod^a, Elena Muñoz^b, Antonio Ramos^b

^a *Servicio de Endocrinología y Nutrición, Hospital Universitario Puerta de Hierro Majadahonda, Madrid, Spain*

^b *Servicio de Medicina Interna, Unidad de Enfermedades Infecciosas, Hospital Universitario Puerta de Hierro Majadahonda, Madrid, Spain*

* Corresponding author.

E-mail address: rocio.cdp@gmail.com (R. Campos).