Tonsillolith. Case report and review of the literature

Il tonsillolito. Caso clinico e revisione della letteratura

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Parole chiave

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Summary

Large oropharyngeal concretions – giant tonsillolith – are not very common. Over the last few years only some 50 cases have been reported in the literature. Many tonsilloliths, especially small concretions, are asymptomatic; large concretions, on the contrary, may produce several symptoms. The case is described of a 56-year-old female complaining of dysphagia, odynophagia, sore throat, right otalgia and swelling in right tonsillar fossa. Routine panoramic radiography revealed a radio-opaque area in right tonsil region. Computed tomography of oropharynx was performed and axial slices revealed a calcified cylindrical lesion in posterior pharyngeal region, between palatoglossus and palatopharyngeus muscles. The tonsillolith was easily excised under local anaesthesia. The postoperative course was good with no recurrence. Microscopic examination of the specimen revealed necrotic debris, "ghost" cells, calcifications and inflammatory cells, confirming the diagnosis of tonsillolith. Authors stress that large tonsillar concretions are uncommon, and may be difficult to diagnose since the tonsillolith can also be mistaken for other anatomic and pathologic structures in the oropharyngeal area.

Riassunto

Concrezioni orofaringee di grandi dimensioni – come tonsilloliti giganti – sono poco frequenti all'osservazione clinica. Negli ultimi anni, solo 50 casi circa sono stati riportati in letteratura. Molti tonsilloliti, specialmente quelli di piccole dimensioni, sono asintomatici; le concrezioni di dimensioni più grandi, al contrario, possono dar luogo a sintomi rilevanti. Gli Autori riportano un caso di una donna di 56 anni, giunta alla loro osservazione per la comparsa di disfagia, odinofagia, faringodinia, otalgia destra e di una tumefazione in corrispondenza della loggia tonsillare. La radiografia panoramica del cavo orale rilevò la presenza di un oggetto radiopaco nella regione tonsillare destra. Una tomografia computerizzata dell'orofaringe rivelò, nelle proiezioni assiali, la presenza di una lesione cilindrica apparentemente calcificata nella regione posteriore dell'orofaringe, tra i muscoli palatoglosso e palatofaringeo. Il tonsillolito fu asportato in anestesia locale agevolmente. Il decorso post-operatorio fu buono e non si rilevò la comparsa di nuove concrezioni. L'esame microscopico evidenziò la presenza di detriti necrotici, cellule "fantasma", calcificazioni e cellule infiammatorie, confermando la diagnosi di tonsillolito. Gli Autori sottolineano che i tonsilloliti sono di riscontro raro e pertanto può essere difficile, nella pratica clinica, la diagnosi differenziale con anomalie anatomiche e patologie neoplastiche della regione orofaringea.

Introduction

Small areas of calcification are frequently encountered on routine sectioning of gross specimens of tonsillectomy, but the presence of large oropharyngeal concretions – giant tonsillolith – is not very common. In the last years, only a few cases (about 50) have been reported in the literature.

The pathogenesis of tonsillolith is still debated: most Authors believe that lithiasis results from recurrent tonsillitis [1 2].

Many tonsilloliths, especially the small concretions, are asymptomatic; large concretions, on the contrary, may produce several symptoms and mimic an abscess or neoplasia.

Instrumental evaluations, especially computed tomography (CT) of the oropharynx, are often performed in the diagnostic workup.

The tonsillolith may extrude spontaneously, or it may require surgical treatment: it may, with gentle pressure, be brought to the outside of the tonsil or removed by curettage under local anaesthesia [3]; in some cases, especially if recurrent infection occurs, unilateral tonsillectomy is necessary [3].

Case report

A 56-year-old female was referred to our Institution with dysphagia, odynophagia, sore throat, right otalgia and appearance of swelling into right tonsillar fossa.

Examination of the throat revealed a large mass without any mucosal ulceration, hard in consistency, projecting through the right tonsillar fossa and the palate simulating a tumor of the oropharynx or a peritonsillar abscess (Fig. 1).

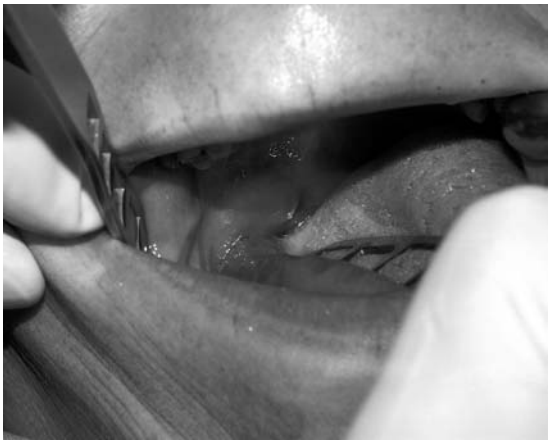

Fig. 1. The clinical appearence of the tonsillolith simulating a tumor of the oropharynx.

A hard, mobile, painless swelling in the right tonsillar fossa emerged upon palpation; cervical lymphadenopathy was present. The remaining findings of the head and neck examination were within normal limits.

The past medical history of this patient was significant for recurrent throat infections. She did not smoke or drink. The general conditions of the patient were good.

Routine hemogram and chemistry examinations failed to reveal any abnormalities.

A swab was taken in the tonsil area but no microbial colonies or fungi were found.

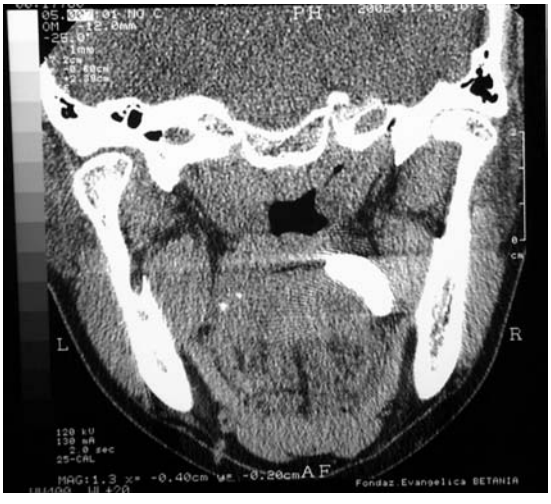

Fig. 2. CT scan reveals a hyperdense lesion in the right tonsil.

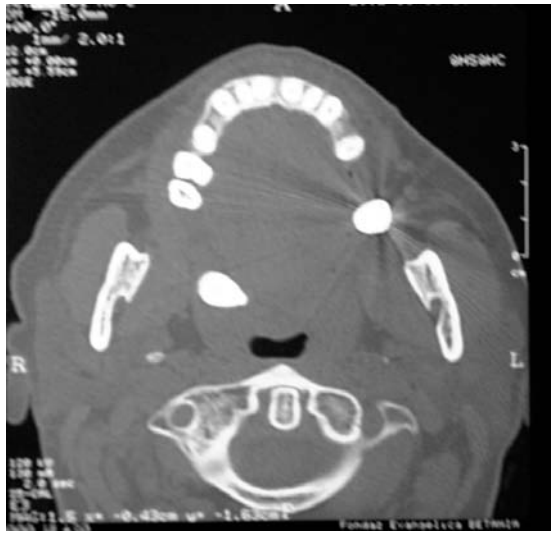

Fig. 3. Axial CT scan images: calcified round lesion in right tonsil.

A routine panoramic radiograph revealed a radiopaque object in the region of the right tonsil.

A computed tomography (CT) scan of the oropharynx was then, performed and CT axial slices revealed a calcified cylindrical lesion at the level of the lower part of ramus of mandible in the posterior pharyngeal region, on the right side, between the palatoglossus and palatopharyngeus muscles (Figs. 2-4).

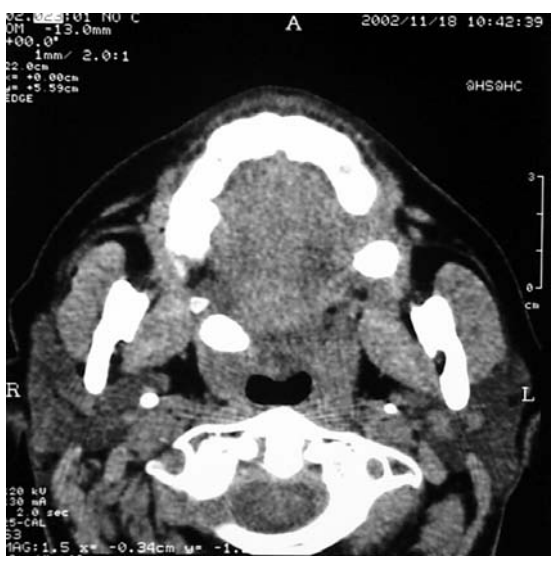

Fig. 4. CT scan with contrast reveals a hyperdense tonsillolith in right tonsil.

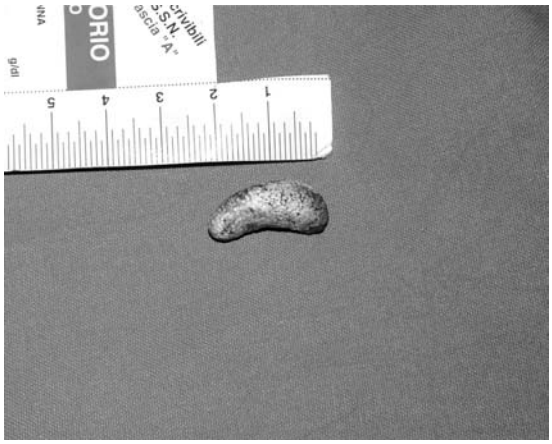

Fig. 5. The specimen of the tonsillolith.

The tonsillolith was removed, under local anaesthesia: the incision being made over the region of the right tonsil, with submucosal dissection.
The post-operative course was good and no recurrence was revealed.
The specimen was submitted for histological evaluation: macroscopically, the tonsillolith measured 20 x 10 mm and weighed 3.2 g. It was cylindrical in shape and greyish white in colour (Fig. 5).
Upon microscopic examination, the specimen showed necrotic debris, "ghost" cells, calcifications and inflammatory cells, confirming the diagnosis of tonsillolith.

Discussion

The age of the patients with tonsilloliths described in the literature ranged from 10 [1] to 77 years [2] (mean 50 years, 49.7 for males, 50.5 for females) with a ratio males/females 1:1.
As far as concerns localization, the tonsillolith was located in the tonsillar fossa in 21.2%, in the tonsillar tissue in 69.70% and in the palatine in 9%.
The size of these concretions ranged from a few millimetres to several centimetres (range [3 4] from 1 mm to 41 x 21 x 19), whereas the weight ranged from 0.56 g [5] to 42 g [6] (mean weight 9.5 g).
Frequently, the tonsillolith is hard in consistency, single or multiple [7]; round [8], oval [6 7 9-12], cylindrical [13], irregular-pyramidal [14] or plurilobular in shape [15]; greyish yellow [6 11 12 16], black [5], red brown [9 13], or dark grey [3] in colour.
Microscopically, the tonsillolith frequently contains carbonates and/or phosphates of calcium [2 9 13 15 17-19]; but other minerals have also been reported such as magnesium, sodium, siliceous, potassium, ammonia radical, copper, aluminium, iron, titanium, manganese, chrome, barium [9 5]. Proteinic material was found in 4 cases [9 13 18 20], whereas microbial colonies, especially G+ and Actinomyces, have been described [3 6 13].
As far as concerns symptoms a pain in the throat [6 10 11 17 18 21-23] has frequently been reported (27.3% cases) but also a swelling in the tonsillar fossa in 15.1% of patients [2-5 15], a swelling in the submaxillary triangle area in 6% [24 25], a dysphagia in 12.1% [10 14 19 26], an odynophagia in 9% [8 12 27], an otalgia in 9% [8 1 20], a peritonsillar abscess in 9% [1 2 16], an alitosis with bad taste in 3% [5]; on the other hand, in 9% [1 7 28 29] of patients the tonsillolith was asymptomatic, when, the concretion was located in the palatine, pharyngeal heaviness was described [30].
The past history was noteworthy due to recurrent throat infection in 27.3% [10 12 16 17 20 30], kidney stones in 1 case [7], gallstones in 1 case [26] and Wharton's duct calculi in 3% of cases [13].
Large tonsillar concretions are uncommon findings, and may be difficult to diagnose since the tonsillolith can also be mistaken for other anatomic and pathologic structures of the pharyngeal region especially on a routine panoramic radiograph or lateral head radiograph. In fact, there are numerous other causes of oropharyngeal radiopacity, such as, for instance, an elongated styloid process, a large maxillary tuberosity, calcifications of arteries, lymph nodes and salivary glands, phleboliths, prominent hamulus of the pterygoid, foreign bodies, abnormalities of the mandibular rami (for example a displaced tooth) [7 8 11 31].
It is not possible to reach differential diagnosis, with any certainty, using CT. X-ray film is more complete and accurate especially as far as concerns localization, borders and nature of the tonsillolith [8].
The aetiopathogenesis of tonsillolith is still uncertain. Most Authors believe that these concretions result from unresolved tonsillitis [3 17]: infectious agents, such as fungi, bacteria and Actinomyces with puss cells serving as an ideal location for stone formation. In these cases it is necessary to remove the tonsils with the calculi, but a history of recurrent infection is not uncommon [3 6 7].
Some Authors [13], on the other hand, have suggested that the tonsillolith results from stasis of saliva in the efferent ducts of the accessory salivary gland, secondary to mechanical obstruction arising from post-tonsillectomy scars or chronic inflammation. This hypothesis is supported by the histological examination of the tissue excised from around the tonsillolith which revealed salivary gland lobuli with efferent ducts surrounded by lymphoid tissue in two cases [13]. Moreover, cases of tonsillolith associated with phosphaturia, kidney stones, gallstones and salivary gland stones have been described; this evidence could include tonsilloliths in the lithogenic diathesis [13].
With regard to therapy, a tonsillolith can usually be

Table I.

First Author (Ref)	Age (Sex)	Location	Signs and/or symptoms	Dimension Weight	Composition	Treatment
Bugge (17)	60 (M) 45 (M)	Bilateral Bilateral	Recurrent tonsillitis Sore throat	3.5 g 4.5 g	Ca, P, trace: Mg, Na, Cu, Al, Ti, Fe, Mn, Cr, Ba	NR
Castellano (9)	68 (F)	Left tonsil	Lymphadenopathy left mandible	28 x 23 x 21 mm 14 g	$CaPO_4$. Trace: $CaCO_3$, $MgPO_4$. Proteins (7%)	Local anaesthesia enucleation
Cerny (1)	10 (F)	Tonsillar fossa	Asymptomatic	26 x 4 mm 0.84 g	NR	NR
Clarke (18)	35 (M)	Right tonsil	Lump and pain in throat	13.3 g	$CaPO_4$, Albuminous material	NR
Cogolludo Perez (14)	69 (F)	Right tonsil	Dysphagia	3 x 2 x 2.3 cm	NR	Tonsillectomy
Cooper (13)	77 (F)	Left tonsillar fossa	Mass in left tonsillar fossa with Wharton's duct calculi	40 x 20 x 20 mm 8 g	$CaCO_3$ (5%), $CaPO_4$ (85%) Proteins (10%) Cocci and bacteria Gram-positive, Actinomyces	Enucleation (prior tonsillectomy)
Dale (5)	54 (F)	Right tonsil	Dysfunction of left temporomandibular joint, bad breath, bad taste, large swollen right tonsil	20 x 10 mm 0.56 g	30% Ca, P	NR
Elidan (20)	25 (F)	Right tonsil	Recurrent throat infection, otalgia	25 x 18 x 1 mm 5.2 g	$CaPO_4$, proteins	NR
Gadgil (10)	28 (M)	Left tonsil	Pain in throat, dysphagia, recurrent throat infection	NR	NR	NR
Gapany-Gapanavicius (2)	26 (M)	Right tonsillar fossa	Pain in throat, swelling, fever	32 x 21 x 17 mm 6.7 g	$CaCO_3$, detritus	NR (prior tonsillectomy)
Goodman (21)	20 (M)	Left tonsil	Pain throat	21 x 15 x 14 mm 3.3 g	NR	NR
Harding (22)	57 (F)	Right tonsillar fossa	Pain in throat	10 x 10 mm	NR	NR (tonsillectomy age 7)
Heppt (15)	77 (M)	Right tonsillar fossa	Mass in right tonsillar fossa	7 g	CaO, P_2O_5, trace SiO_2, MgO, Na_2O and K_2O	NR
Hiranandani (6)	65 (F)	Right tonsil	Pain throat	30 x 25 mm 42 g	$CaCO_3$,$CaPO_4$, NH_3 Actinomyces	Right tonsillectomy
Hoffman (24)		Right tonsil	Swelling in right submaxillary triangle area, enlargement right and left tonsil	NR	NR	NR

Table I. *(Follows)*

First Author (Ref)	Age (Sex)	Location	Signs and/or symptoms	Dimension Weight	Composition	Treatment
Jones (3)	70 (M)	Right tonsil	Mass in right tonsillar fossa	1-2 mm	Core of eosinophilic material with microbial colonies forming surface layers, $CaCO_3$, $CaPO_4$ Actinomyces	Enucleation
Kimura (16)	27 (M)	Left tonsil	Recurrent, pharyngitis, tonsillitis and tonsillar abscess	30 x 26 x 16 mm 8.5 g	$CaPO_4$	Spontaneous expulsion and tonsillectomy
Kuleinich (25)	50 (F)	Right tonsil	Enlarged submandibular glands	1.3 g	NR	NR
Marshall (28)		Left tonsil	Asymptomatic	NR	NR	NR
Mishenkin (30)	53 (F) 17 (F) 33 (M)	Palatine Palatine Palatine	Recurrent tonsillitis; pharyngeal heaviness Recurrent tonsillitis Pharyngeal heaviness	34 x 1 mm 2.7 g 25 x 1 mm 3.3 g 23 x 20 mm 37 g	PO_4, $CaCO_3$	NR (Tonsillectomy age 30)
Modrzynski (4)	70 (M)	Right tonsil	Pharyngitis and recurrent tonsillitis, recurrent throat infection	41 x 21 x 19 mm		
Neshat (7)	69 (M)	Left tonsil	Asymptomatic nephrolithiasis	12 x 16 mm	NR	Enucleation under local anaesthesia
Ramanjaneyulu (11)	65 (M)	Right tonsillar fossa	Pain in throat, right otalgia, cervical lymphadenopathy	NR	NR	Patient refused surgery
Revel (8)	68 (M)	Right tonsil	Odynophagia, right otalgia	13 mm	NR	Right tonsillectomy
Rubin (23)	32 (M)	Right tonsil	Pain and lump in throat	37 x 28 mm 24.7 g	NR	NR
Shrimali (12)	63 (F)	Left tonsillar fossa	Pain in throat, odynophagia, pharyngitis and recurrent tonsillitis	25 x 20 mm 32 g	$CaCO_3$, $CaPO_4$	Enucleation under general anaesthesia (tonsillectomy age 7)
Swain (26)	56 (F)	Right tonsil	Pain throat, dysphagia, cervical lymphadenopathy, gallstones	Large	PO_4, $CaCO_3$	NR
Vera Llao (27)	43 (F)	Right tonsil	Odynophagia			
Westmore (29)	63 (M)	Left tonsil	Asymptomatic	15 x 15 x 13 mm	NR	Enucleation
Woodman (19)	57 (M)	Right tonsil	Dysphagia, lump in throat	6.2 g	$CaPO_4$, $CaCO_3$	NR

removed by curettage under local anaesthesia [6 7 9]; an incision is often necessary to expose it. Tonsillectomy is indicated in patients with chronic tonsillitis [3].

The Authors believe that some tonsilloliths, such as the case reported here, may be difficult to diagnose due to the frequent finding, in the oropharynx, of other calcifications and/or inflammatory or neoplastic masses.

The present observations and diagnostic difficulties suggest that the symptoms play a very important role in the diagnosis of oropharyngeal lesions.

In fact, in this case, digital palpation allows the consistency, shape, surface, size, borders and mobility of the lesion to be defined.

By means of these characteristics, it is possible to recognize and differentiate submucosal neoplastic lesions, which are not very movable and are often painful on account of inflammation and neural involvement.

Moreover, imaging findings are necessary to establish the localization and extent of the lesions, and, in the case of calcarious concretions, in particular, to predict the nature of the lesion. Histological examinations will confirm, or not, the radiological suspicions.

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