

Isolation of the bacterial causes of tonsillitis in dogs

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(Received October 8, 2013; Accepted November 11, 2013)

Abstract

The study was performed to identify the bacterial causes of tonsillitis in dogs. Twelve clinical cases of dogs (5 males and 7 females) of different ages and breeds were observed. Tonsils swabs were taken from all the dogs, then cultured on different agars and bacterial smears prepared from all cultures and Gram stains were done. The study confirmed that the most bacterial causes of tonsillitis in dogs were *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus intermedius*, *Staphylococcus albus*, *Streptococcus pyogenes*, *Klebsiella spp.* and *Pasteurella spp.*

Keywords: Bacterial causes; Tonsillitis; Dogs

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التعرف على المسببات الجرثومية لالتهاب اللوزتين في الكلاب

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الخلاصة

صممت هذه الدراسة لمعرفة المسببات الجرثومية لالتهاب اللوزتين في الكلاب في العراق محافظة دهوك. استخدمت اثنا عشر من الحالات المرضية من الكلاب (5 ذكور و 7 اناث) وذات اعمار وانواع مختلفة. اخذت مسحات من اللوزتين من كل الحالات وزرعت في اوساط زرعية مختلفة واخذت منها مسحات وصبغت لتشخيص مسببات هذه الالتهابات. هذه الدراسة اثبتت اصابة اللوز في الكلاب بالمسببات التالية: *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus intermedius*, *Staphylococcus albus*, *Streptococcus pyogenes*, *Klebsiella spp.* and *Pasteurella spp.*

Introduction

Tonsillitis is common in pet animals like dogs, it occurs as a primary disease (1), and it could occurs secondary to nasal, oral, or pharyngeal disorders, chronic vomiting, regurgitation or chronic coughing (2). Chronic tonsillitis in young dogs is thought to represent maturation of pharyngeal defense mechanisms (1,2). The most pathogenic bacteria that isolate from diseased tonsils are *Escherichia coli*, *Staphylococcus aureus*, and *hemolytic streptococci* (1-3).

Fever and malaise are uncommon unless consequent to systemic infection (1) Gagging, followed by retching and soft cough, may result in expulsion of small amounts of mucus (1,3). In appetite, listlessness, salivation, and

dysphagia are seen in severe tonsillitis (2,3). Tonsillar enlargement may range from protrusion just out of the crypts to a mass of sufficient size to cause dysphagia or inspiratory stridor (2,4,5). Tonsillitis usually is a sign of generalized or regional inflammatory disease (5). Squamous cell carcinoma, malignant melanoma, and lymphosarcoma commonly occur in canine tonsils and should be distinguished from tonsillitis (6,7). Tonsillar lymphosarcoma generally results in bilateral symmetric enlargement, whereas nonlymphoid neoplasia is usually unilateral (5,7). The aim of this study is to find out the major bacterial causes of tonsillitis in different clinical cases of dogs visiting the clinic of the faculty of veterinary medicine in Duhok University.

Materials and methods

Twelve dogs (5 males and 7 females) of different ages and breeds were used in this study for the period from January 2011 till May 2013, as shown in Table 1.

Table 1. Shows the numbers of cases, their sex, ages and breeds

No.	Sex	Age (Year)	Breed
1	Male	6	Danish
2	Female	8	Clumber
3	Female	8	Bulldog
4	Male	9	Kangal dog
5	Female	9	Local
6	Female	3.5	Kangal dog
7	Male	11	Kangal dog
8	Female	4	Local
9	Female	1	Kangal dog
10	Female	0.5	Local
11	Male	1	Local
12	Male	8 months	Kangal dog

All the diseased dogs were completely clinically examined at the clinic of faculty Veterinary Medicine – Duhok University; they had been suffering from different health problems like oral and nasal disorder, vomiting and coughing. All clinical examination parameters used to diagnose these cases. Tonsils swabs taken from all the diseased dogs, some of them under sedation and some under effect of general anesthesia. Some swabs then cultured on the MacConkey agar and blood agar, while some swabs cultured on the Blood Agar, Mannitol Salt Agar and Nutrient Agar. Bacterial smears prepared from all the cultures. Gram stains and most biochemical tests like Mannitol Salt Agar, Blood agar Plates, Coagulase Test, MacConkey agar and Indole test (8,9) used to identify the causes of these tonsil inflammation.

Results

All the tonsils swabs from all the diseased dogs showed different infections as a source of the inflammation of tonsillitis in these dogs, except the cases No. 2 and 5 were the samples destroyed. The different microorganisms which were diagnosed through the bacteriological examinations were appeared in Table 2. Figures 1-4 show microscopic appearance of some of these microorganisms.

Table 2. Show the result of the bacterial causes of the Tonsillitis

No.	Breed	Bacterial causes
1	Danish	<i>Esherichia coli</i> & <i>Proteus spp</i>
2	Clumber	
3	Bulldog	<i>Klebsiella spp.</i>
4	Kangal dog	<i>Staphylococcus intermedius</i>
5	Local	
6	Kangal dog	<i>Staphylococcus aureus</i>
7	Kangal dog	<i>Staphylococcus aureus</i>
8	Local	<i>Esherichia coli</i> & <i>Staphylococcus aureus</i>
9	Kangal dog	<i>Streptococcus pyogenes</i>
10	Local	<i>Streptococcus pyogenes</i>
11	Local	<i>Staphylococcus albus</i>
12	Kangal dog	<i>Pasteurella spp</i>

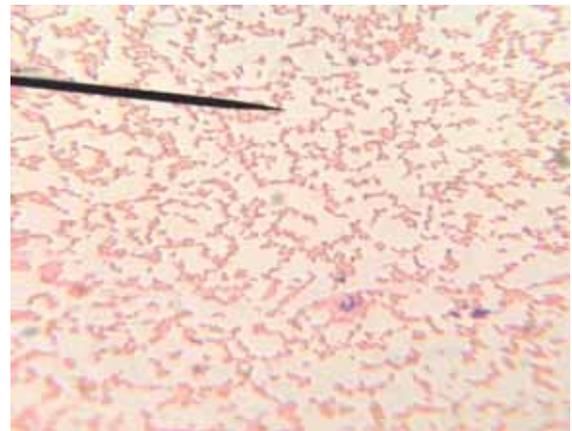


Fig. 1: Infection with *Pasteurella spp* with Gram stain. (100X).

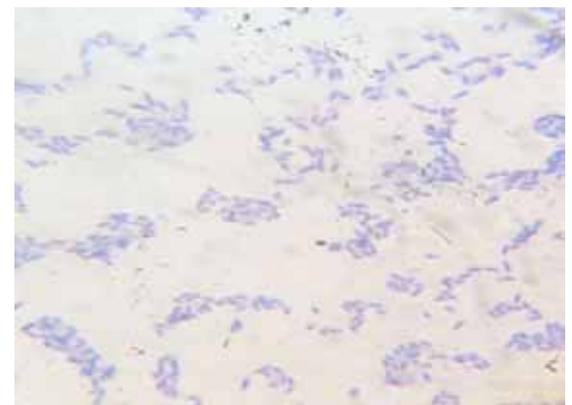


Fig. 2: Infection with *Pasteurella spp* methylene blue stain. (100X).

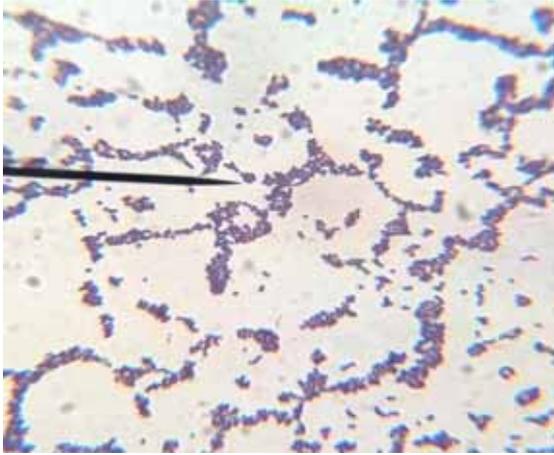


Fig. 3: Infection with *Staphylococcus albus* Gram stain. (100X).



Fig. 4: Infection with *Streptococcus pyogenes* Gram stain. (100X).

Discussion

For the first time in Iraq the identification of the bacterial causes of tonsillitis in dogs was done and

performed through this study. The study confirmed that the most bacterial causes of tonsillitis in dogs were *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus intermedius*, *Staphylococcus albus*, *Streptococcus pyogenes*, *Klebsiella spp.* and *Pasteurella spp.* These findings agreed with the results of other studies (2,4,5). During the review of the literatures we did not find any confirmation that the *Staphylococcus albus* and *Pasteurella spp.* are the causes of the tonsillitis in dogs as this study identified (5-7). Tonsillitis seems to affect smaller dogs more than larger breeds (7) while in this study most infections were in large breeds. The infection of tonsillitis by *Klebsiella spp.* diagnosed in small breed, the present study find out that this infection in large breed like a bulldog. In most of the cases, tonsillitis is caused by viral infection and thus it is infectious and spreads like any other common disease. Like the viral tonsillitis, bacterial tonsillitis is also infectious and can be easily spread through direct contact like sneezing, coughing, respiratory secretions (6). This study is for the first time to be performed in this area in identifying the bacterial cause of tonsillitis in some different breed of dogs.

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