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Structural aspects in tonsillitis vs normal

The pathology of childhood occurring with increased frequency is tonsillitis. The infection affects both sexes equally, without any association with environmental factors. The symptomatology attracts attention and requires treatment by a specialized medical team. The severity of the symptoms often leads to surgery to remove these formations via a tonsillectomy. An important step in management for tonsillitis understands the microbiological and pathological aspects. After performing microscopic slides, the preparations are examined by performing microscopic analysis. The process of the permanent microscopic preparations was based on prior knowledge of the steps from the classical method, using a standard H&E staining technique. The diagnosis is established by laboratory methods, namely by the analysis of usual or specific-colored permanent microscopic preparations. This paper demonstrates how histological examination can help to differentiate between healthy and infected specimens. The histopathological examination revealed chronic tonsillitis with reactive follicular hyperplasia in all pathological cases of children, useful to mention that timely histopathological investigation of the underlying tissues of the tonsils helps in the accurate indication of microorganisms that are difficult to cultivate. In this context, the histological examination also helps to differentiate colonization from tissue infiltration.

Key words: tonsils, pathology, tonsillitis, diagnosis, histopathology, microscopy, follicular hyperplasia.

Introduction

Tonsillitis is a common disease in children before 16 years old [1-3]. In this paper, attention is paid to the pathogenesis, laboratory diagnosis, research and treatment of tonsillitis in children [4-6]. An important step in management for tonsillitis understands the microbiological and pathological aspects [7-9]. In terms of remediation, tonsillectomy is the operative medical curative act [1, 10, 11]. After tonsillectomy, the tonsillar tissue will be sent for an examination of the pathological tissues [12-15]. Therefore, it is possible to analyze of the samples using microscopic examination and staining to review colored samples (by following the steps of the classical method) [16-18]. This paper shows how tissue sample of tonsil is sent to laboratory for a histopathological examination [19-21, 28]. Samples from tonsils after fixation in formalin were embedded in blocks with paraffin, from which microscopic preparations were prepared. The slides were stained with Haematoxylin and Eosin (H&E) and other specific colorations [22, 23].

Tonsillar diseases affect also other anatomical-related structures like the middle ear cleft, paranasal sinuses, and upper aero-digestive tract, for example [15, 24]. Besides the analysis and diagnosis of the colored samples, in chronic tonsillitis, a culture of microorganisms obtained from the tonsillar is also important for a proper diagnostic of tonsillitis [25]. The incidence of acute tonsillitis was observed in children of school age, with a pick [26].

From reviewing a statistical database, a β -hemolytic streptococci (GABHS), specifically *Streptococcus pyogenes*, is responsible for about approximate 5 % of acute medical consultations that require investigations [24]. The infection of the tonsil commonly occurs with Streptococcal pharyngitis. Where this is suspected, diagnosis is made using either a rapid antigen detection test or throat culture. In addition, acute tonsillitis can be caused by viruses, such as double-stranded DNA viruses (including human adenoviruses and Epstein Barr Virus), single-stranded DNA viruses (Human Boca Virus), single-stranded RNA viruses (influenza and para-influenza viruses; rhino-viruses; entero-viruses including Cocksackie viruses; corona viruses; respiratory syncytial virus (RSV); human meta-pneumo-virus), retro-viruses (HIV) [27].

Experimental

To help the medical staff understand the presented concerns, a series of images made after microscopic slides were prepared. For this purpose, the operating parts are intended to make the pathological anatomy

service for macroscopic examination for diagnostic purposes clearer. After performing microscopic preparations, the preparations are examined by performing microscopic analysis. The process of the permanent microscopic preparations was based on prior knowledge of the steps from the classical method, using a standard H&E staining technique. The analyzed samples were extracted from patients of both sexes, children under 16 years of age, from urban and rural areas. The details of each case are presented below.

Case 1 — urban — female

Diagnostic: chronic reactive tonsillitis

Biological product — Palatine tonsils

Macroscopic — Palatine amygdala

Microscopic — Tonsil tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content.

Case 2 — urban — male

Diagnostic: chronic reactive tonsillitis with scar changes

Biological product — Palatine tonsils

Macroscopic — Palatine amygdala, 25x15x15 mm.

Microscopic — amygdala tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content

Case 3 — male — urban

Diagnostic: chronic reactive tonsillitis with sclerocicatricial changes

Biological product — Palatine tonsils

Macroscopic — Palatine amygdala, 22x12x15 mm.

Microscopic amygdala tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content.

Case 4 — female — urban

Diagnostic: chronic reactive tonsillitis with post-inflammatory scar changes

Biological product — Palatine tonsils

Macroscopic — Palatine amygdala, 20x25 mm.

Microscopic — amygdala tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content.

Case 5 — female — urban

Diagnostic: chronic reactive tonsillitis with post-inflammatory scar changes

Biological product — Palatine tonsils

Macroscopic — Palatine amygdala, 22x26 mm.

Microscopic — amygdala tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content.

Case 6 — urban — female

Diagnostic: chronic reactive tonsillitis

Biological product — Palatine tonsils

Palatine amygdala

Microscopic — Tonsil tissue consisting of reactive lymphoid follicles, areas of post-inflammatory fibrous remodeling, branched crypts with catarrhal content.

Results and Discussion

From the following microscopical colored slides, we can analyze and observe particular aspects in tonsillitis. Tonsils are sub-epithelial lymphoid tissue located in the oropharynx between the palatoglossal pillar anteriorly and the palatopharyngeal pillar posteriorly. More exactly, tonsils are in a region where high populations of microorganisms are found. The histopathological examination revealed chronic tonsillitis with reactive follicular hyperplasia in all cases of the study. In terms of the infection route, microorganisms like *S. pyogenes* penetrate into the tonsillar tissue through the defect in the epithelium and get access to the lymphatic system, which is responsible for all the individual attacks of tonsillitis. Anatomical region is near tonsils (Fig. 1), tonsils with specific lymphoid formations is presented in Figure 2.



Figure 1. Tongue. van Gieso x10

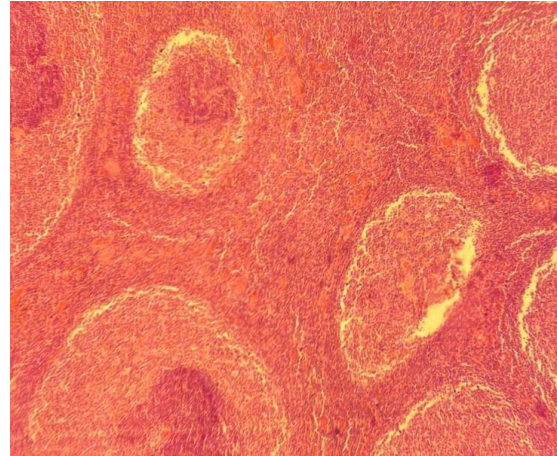


Figure 2. Palatine tonsilla HE x10

The detailed image from the previous slide is presented in Figure 3; tonsillitis with specific reactive reaction is typical lymphoid formations (Fig. 4). Epithelium is near tonsils, pathological slide is presented in Figure 5.

Detailed image from typical lymphoid formations in tonsillitis is presented in Figure 6.

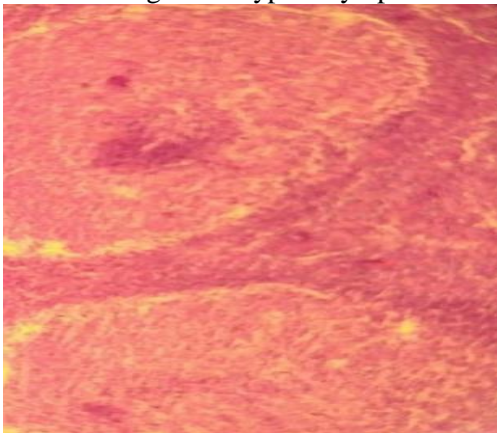


Figure 3. Palatine tonsilla HE x40

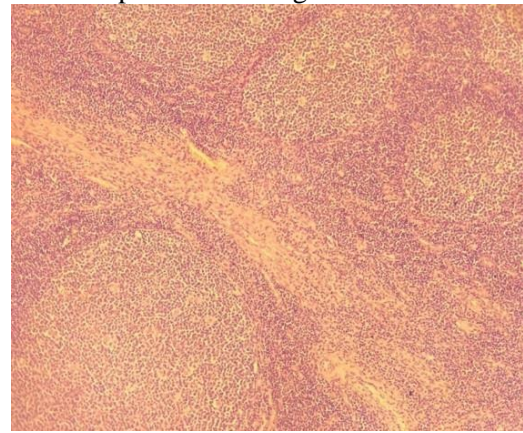


Figure 4. Reactive tonsillitis HEx10

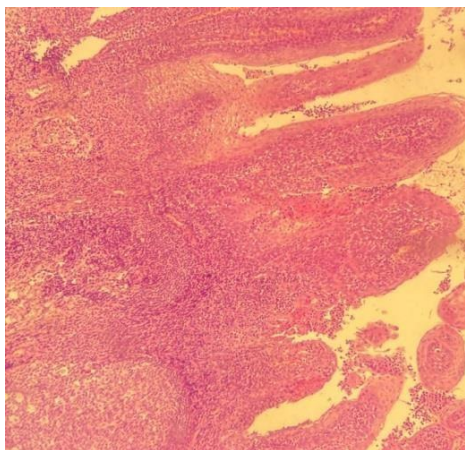


Figure 5. Reactive tonsillitis HEx10

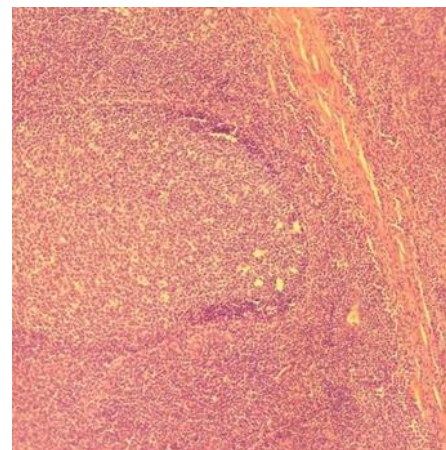


Figure 6. Reactive tonsillitis HEx10

Following the microscopical colored slides, we can analyze and observe particular aspects in tonsillitis. Tonsils are subepithelial lymphoid tissue located in the oropharynx between the palatoglossal pillar anteriorly

and the palatopharyngeal pillar posteriorly. More exactly, tonsils are in a region where microorganisms are found and under optimal conditions, infection can occur where sufficient populations of pathogens are present.

The histopathological examination revealed chronic tonsillitis with reactive follicular hyperplasia in all cases of the study. In such circumstances, microorganisms penetrate into the tonsillar tissue through the defect in the epithelium and get access to the lymphatic system, which is responsible for all the individual attacks of tonsillitis.

Conclusions

The histopathological examination revealed chronic tonsillitis with reactive follicular hyperplasia in all pathological cases of children, useful to mention that timely histopathological investigation of the underlying tissues of the tonsils helps in the accurate indication of microorganisms that are difficult to cultivate in this context, the histological examination also helps to differentiate colonization from tissue infiltration

Innovations and breakthroughs

The authors confirm and also recommend that all tonsillectomy samples be investigated for histopathological analysis, even if samples have a normal rough appearance.

Funding

The authors declare that they did not receive financial support for the study and / or authorship of this article.

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Қалыптыға қарсы тонзиллиттің құрылымдық аспектілері

Балалық шақтың патологиясында жиілігі жоғары ауру — тонзиллит кездеседі. Инфекция қоршаған орта факторларымен ешқандай байланысы жоқ екі жынысқа да бірдей әсер етеді. Симптомдар назар аударуды және мамандандырылған медициналық бригаданың емдеуін талап етеді. Симптомдардың салдары, көбінесе тонзиллэктомия хирургтің араласуына әкеледі. Тонзиллитті емдеудегі маңызды қадам — микробиологиялық және патологиялық аспектілерді түсіну. Микроскопиялық слайдтарды дайындағаннан кейін препараттар микроскопиялық талдау арқылы зерттеледі. Тұрақты микроскопиялық препараттарды жасау процесі гематоксинді эозинмен бояудың стандартты әдісін қолдана отырып, классикалық әдіске негізделген. Диагноз зертханалық зерттеулермен, атап айтқанда арнайы боялған микроскопиялық препараттарды талдау арқылы анықталады. Мақалада гистологиялық зерттеу сау тіндерді жұқтырған тіннен ажыратуға қалай көмектесетіні көрсетілген. Гистопатологиялық зерттеуде барлық алты клиникалық жағдайда балаларда реактивті фолликулярлық гиперплазиясы бар созылмалы тонзиллит анықталды. Зақымдану сипаты бойынша бадамша бездердің негізгі тіндерін гистопатологиялық зерттеу патогенді көрсетуге мүмкіндік беретінін атап өткен жөн. Бұл әсіресе өсірілмейтін немесе қиын өсірілетін микроорганизмдерге қатысты өте маңызды. Осы тұрғыда гистологиялық зерттеу микробтық колонизацияны тіндердің инфильтрациясынан ажыратуға көмектеседі.

Кілт сөздер: бадамша бездер, патология, тонзиллит, диагностика, гистопатология, микроскопия, фолликулярлық гиперплазия.

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Структурные аспекты тонзиллита по сравнению с нормой

В патологии детского возраста встречающееся с повышенной частотой заболевание — тонзиллит. Инфекция поражает представителей обоих полов в равной степени без какой-либо связи с факторами окружающей среды. Симптоматика привлекает внимание и требует лечения специализированной медицинской бригадой. Серьезность симптомов часто приводит к хирургическому вмешательству, как тонзилэктомия. Важным шагом в лечении тонзиллита является понимание микробиологических и патологических аспектов. После приготовления микроскопических слайдов препараты исследуют с помощью микроскопического анализа. Процесс изготовления перманентных микроскопических препаратов был основан на классическом методе с использованием стандартной техники окрашивания гематоксилина с эозином. Диагноз устанавливают лабораторными исследованиями, а именно анализом специфически окрашенных микроскопических препаратов. В настоящей статье показано, как гистологическое исследование может помочь, для того чтобы отличить здоровые образцы тканей от инфицированных. При гистопатологическом исследовании во всех шести клинических случаях у детей выявлен хронический тонзиллит с реактивной фолликулярной гиперплазией. Полезно упомянуть, что гистопатологическое исследование основных тканей миндалин по характеру поражения позволяет провести индикацию возбудителя. Особенно это важно когда речь идет о некультивируемых или труднокультивируемых микроорганизмах. В этом контексте гистологическое исследование также помогает отличить микробную колонизацию от тканевой инфильтрации.

Ключевые слова: миндалины, патология, тонзиллит, диагностика, гистопатология, микроскопия, фолликулярная гиперплазия.