

# Epidemiology of conjunctivitis in the emergency department of a reference hospital in Goiânia

## *Epidemiologia da conjuntivite no departamento de emergência de um hospital de referência em Goiânia*

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### ABSTRACT

**Objective:** Evaluate the epidemiology of ocular emergencies in a Reference Ophthalmological Hospital in Goiânia, with emphasis on acute infectious conjunctivitis, morbidity with a higher incidence in this Service. It aims to delineate the main etiologies found among infectious conjunctivitis and to compare them with those found in several others Ophthalmology reference services, thus guiding future diagnoses and treatments of ocular infectious diseases. **Methods:** A cross-sectional and retrospective study was conducted with 783 patients seen at the ophthalmological emergency of the Goiânia Institute of Eyes from May 1 to September 3, 2017. Data were collected through protocols based on physical charts of the ophthalmologic emergency of the hospital. **Results:** The most common ocular emergencies were acute conjunctivitis, followed in decreasing order of incidence by hordeolum and foreign body on ocular surface, with percentages, respectively, of 10.98% and 9.96%, respectively. Among the 783 patients admitted to the emergency room in this period, 302 were diagnosed with conjunctivitis, representing a percentage of 38.56% of the total number of visits. Of these, 226 were diagnosed as having bacterial etiology (74.8%) and 38 (25.2%) as viral etiology. **Conclusion:** Infectious conjunctivitis represents a substantial percentage of the pathologies admitted to ophthalmological emergency services worldwide. In the present study there was also a prevalence of bacterial conjunctivitis, as well as an irrefutable tendency to the early institution of topical antibiotic therapy. The high prevalence of this comorbidity and the difficulty in the clinical diagnosis of the etiology of the infection reiterates the need for further studies in the area in order to optimize the diagnosis and treatment of infectious conjunctivitis.

**Keywords:** Conjunctivitis/diagnosis; Conjunctivitis/etiology; Emergency service, hospital; Morbidity

### RESUMO

**Objetivo:** Avaliar as características das urgências oftalmológicas atendidas no Pronto Socorro do Instituto de Olhos de Goiânia, com destaque à conjuntivite infecciosa, morbidade de maior incidência neste Serviço. Visa ainda delinear as principais etiologias encontradas dentre as conjuntivites infecciosas e compará-las às encontradas em diversos outros serviços de referência em Oftalmologia, norteando, assim, futuros diagnósticos e tratamentos das patologias infecciosas oculares. **Métodos:** Estudo transversal e retrospectivo, com 783 pacientes atendidos na emergência oftalmológica do Instituto de Olhos de Goiânia, no período de primeiro de maio a 03 de setembro de 2017. Os dados foram coletados por meio de protocolos baseados nos prontuários físicos da emergência oftalmológica do hospital. **Resultados:** Observou-se que, quanto às causas diagnósticas, a principal foi a conjuntivite aguda, seguida, em ordem decrescente de incidência, por hordéolo e corpo estranho em superfície ocular, com porcentagens, respectivamente, de 10,98% e 9,96%. Dentre os 783 pacientes admitidos na emergência neste período, 302 foram diagnosticados com conjuntivite, representando uma porcentagem de 38,56% da totalidade dos atendimentos. Dentre essas, 226 foram diagnosticados como sendo de etiologia bacteriana e 38 de etiologia viral. Os números absolutos nos levam a uma porcentagem de 74,8% de conjuntivite bacteriana. **Conclusão:** A conjuntivite infecciosa representa uma porcentagem substancial dentre as patologias admitidas nos serviços de urgência oftalmológica em todo o mundo. No presente estudo houve ainda prevalência da conjuntivite bacteriana, bem como uma tendência irrefutável à instituição precoce de antibioticoterapia tópica. A alta prevalência desta comorbidade e a dificuldade no diagnóstico clínico da etiologia da infecção reitera a necessidade de realização de maiores estudos na área, a fim de otimizar o diagnóstico e a terapêutica da conjuntivite infecciosa.

**Descritores:** Conjuntivite/diagnóstico; Conjuntivite/etiologia; Serviço hospitalar de emergência; Morbidade.

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## INTRODUCTION

The conjunctiva is a transparent mucous membrane covering the inner surface of the eyelids and the anterior surface of the globe, ending in the corneoscleral limbus. It has an important protective role, mediating both passive and active immunity.<sup>(1)</sup>

The inflammation or infection of the conjunctiva is known as conjunctivitis, and is characterized by dilatation of the conjunctival vessels, resulting in hyperemia and conjunctival edema, typically with secretion.<sup>(2)</sup>

Conjunctivitis is the most common ocular condition diagnosed in US emergency departments, accounting for nearly one-third of all eye-related findings.<sup>(3)</sup>

Instituto de Olhos de Goiânia (IOG) has an Emergency Care Service specialized in Ophthalmology working 24/7 and being one of the few services of this modality in Goiânia. This is an Emergency service focused on the private system and health insurances covering both the population of the Capital and several municipalities of the State.

The State of Goiás is located in the Central-West region of Brazil, in Planalto Central, and borders the states of Tocantins, Bahia, Minas Gerais, Mato Grosso do Sul, Mato Grosso, and the Federal District. The weather in the city of Goiânia, capital of the state, is characterized by a hot and rainy summer, a spring with the highest temperatures of the year, and a dry winter with high thermal amplitude.<sup>(4)</sup>

The objective of the present study is to evaluate the characteristics of the ophthalmologic emergency services seen in the Emergency Room of Instituto de Olhos de Goiânia, with emphasis on infectious conjunctivitis, morbidity with a higher incidence in this Service. The present study aims at presenting the main etiologies found among infectious conjunctivitis, and comparing them to those found in several other reference services in Ophthalmology, thus guiding future diagnoses and treatments of ocular infectious diseases.

## METHODS

This is a cross-sectional study in which data was collected on the patients treated at the Emergency Service of IOG between May 1, 2017 and September 3, 2017, for 126 consecutive days.

The variables studied were the medical record, gender, age, diagnostic hypothesis, need for return to the emergency service and/or specialist, and whether the patient was referred for any procedure or evaluation in a surgical center.

As inclusion criterion, we considered all those patients who were initially treated by a First-Year Resident (R1) in Ophthalmology at IOG, who were admitted in the period described above and who had all the data filled in both the worktable and in the medical records of the Institution.

As exclusion criteria, we considered all patients not treated at PA during this period, those who were not treated by R1s, those who did not have all the data filled in the worktable nor the medical record, as well as those who needed to return, being treated one more time.

Data was treated by methods of descriptive statistics. The variables were expressed in absolute frequencies. Microsoft Excel® 2010 software was used to create the charts and tables.

## RESULTS

Of the 1,062 patients admitted to the emergency service of Instituto de Olhos in the aforementioned period, 783 (73.72%) patients were treated by the R1s. Of these, 302 were diagnosed with conjunctivitis, representing a percentage of 38.56% of the total number of visits. In descending order of incidence, the table below shows the diagnosis of hordeoloid and foreign body on the ocular surface, with percentages of 10.98% and 9.96% (figure 1), respectively.

Regarding the diagnostic causes, the main one was acute conjunctivitis, making a total of 302 patients with this pathology, 264 of which classified as acute infectious conjunctivitis. Of these, 226 (75%) were diagnosed as having bacterial etiology, and 38 (12%) viral etiology (figure 2).

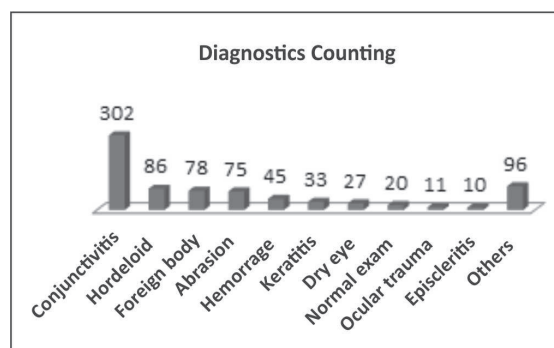


Figure 1: Diagnoses found in the study

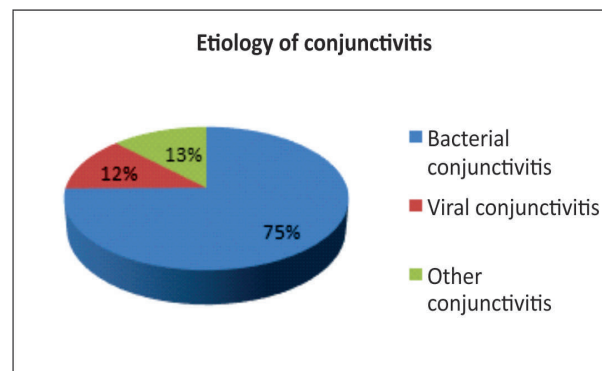


Figure 2: Etiology of conjunctivitis treated in the emergency service

## DISCUSSION

In the analysis of the diagnostic causes, the main one was acute conjunctivitis, in agreement with the literature, which evidences this pathology as morbidity of higher incidence in departments of ophthalmological emergency.<sup>(3-6)</sup> However, this data is in agreement with what some authors state with regard to the most prevalent pathologies, and in some studies traumatic causes are those in the first place.<sup>(7-9)</sup>

When assessing conjunctivitis in isolation, we emphasize the fact that of the 302 patients with this condition, 264 were classified as acute infectious conjunctivitis. Of these, 226 were diagnosed as being of bacterial etiology, and 38 of viral etiology. Absolute numbers lead us to a percentage of 74.8% of bacterial conjunctivitis, data not consistent with that found in similar studies in several parts of the world, which despite the divergence

in percentage is unanimous in stating the prevalence of viral conjunctivitis in relation to the bacterial one.<sup>(5,10,11)</sup>

There are reports showing that viruses cause up to 80% of all cases of acute conjunctivitis.<sup>(12)</sup> The clinical accuracy rate in the diagnosis of viral conjunctivitis is 50% lower compared to laboratory confirmation, since many cases are mistakenly diagnosed as bacterial conjunctivitis.<sup>(13)</sup>

The analysis of the present study reveals an inconsistency between the data obtained and those reported in the literature, a fact that can be justified both by the difficulty already reported in establishing precisely the etiological diagnosis of the infection and by the climatic and population particularities of the study sample.

The weather in the city of Goiânia is characterized by a hot and rainy summer, a spring with the highest temperatures of the year, and a dry winter with high thermal amplitude.<sup>(14)</sup> The period in which the study data were collected (May to September) corresponds to the seasons of Autumn and Winter in our country, and the quarter from June to August is characterized by being less rainy and with milder temperatures. This fact may have corroborated the statistics found, since the data under study was collected in times of lower temperatures in Brazil, and there is strong data stating that viral conjunctivitis is more prevalent during the summer.<sup>(2)</sup>

It is also described the fact that viral conjunctivitis is the most common cause of infectious conjunctivitis in the adult population.<sup>(12)</sup> However, the work under study does not systematically divide the population studied into age groups in order to analyze separately the most common cause that would affect each part of the population. Considering that bacterial conjunctivitis accounts for the majority (50-75%) of cases in children<sup>(2)</sup>, the fact that a considerable portion of the study sample comprises this age group would justify a deviation of the result in this sense.

However, despite the biases reported, it can be inferred that the higher incidence of bacterial conjunctivitis (74.8%) compared to the viral one (12.58%) does not fail to reflect a difficulty in establishing the etiology of the infection.

Therefore, the divergent may result be related to the fact that the diagnoses were performed by first-year resident doctors, whose knowledge in Ophthalmology is still under construction. In this situation, doubt in diagnosis may lead to the early onset of topical antibiotic therapy, and often a misdiagnosis of bacterial conjunctivitis may be given for precaution.

It can also be inferred that the diagnostic impasse evidenced in the present study reflects a difficulties even of more experienced ophthalmologists, given the lack of specificity of many of the signs and symptoms in the etiological differentiation. The literature is unanimous in reaffirming the importance of ocular examination combined with anamnesis in the diagnosis of any ocular pathology, including conjunctivitis. However, it has already been emphasized in other studies that the clinical presentation is not specific in most cases, since the analysis on the type of secretion and the patient's symptoms do not always lead to an accurate diagnosis. In addition, there is little scientific evidence correlating signs and symptoms of conjunctivitis with the underlying cause.<sup>(2)</sup>

Given the impasse, a great difficulty in the precise establishment of the aetiology in question is to be expected, often leading to misdiagnosis and imprecise behavior. In one of the studies, it was even shown that 92% of clinicians in general establish the diagnosis of acute infectious conjunctivitis, despite the uncertainty in the differentiation between bacterial and viral conjunctivitis.<sup>(15)</sup> This fact reiterates the unanimous difficulty in establishing this diagnosis.

However, obtaining conjunctival cultures does not solve the impasse in question, since the collection of samples is recommended only for cases of suspected infectious neonatal conjunctivitis, recurrent conjunctivitis, recalcitrant conjunctivitis in therapy, conjunctivitis presenting severe purulent secretion, and cases suspected of gonococcus or chlamydia infection.<sup>(16)</sup> However, it is still an alternative to be considered for study purposes, especially in regard to obtaining data that make it possible to correlate the clinical findings in question with the conjunctival cultures of the patients.

Despite all the difficulties mentioned, there is no justification for the use of topical antibiotics in viral conjunctivitis, and these should even be avoided due to the adverse effects of the treatment.<sup>(13)</sup>

## CONCLUSION

It is necessary to carry out further studies in the area, including the possibility of collecting material for laboratory studies and obtaining data that make it possible to correlate the clinical findings in question with the conjunctival cultures of the patients. Thus, establishing the etiological diagnosis in daily practice can become progressively more accurate.

Investments in this sense would imply the reduction of funds for unnecessary treatments, savings on public expenses, and less induction of bacterial resistance to the antibiotics available on the market.

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