

The Clinical Presentation of Epidemic Conjunctivitis in Sudan

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Abstract

Background: Viral conjunctivitis is a prevalent eye infection that is typically linked to epidemic circumstances. The aim of this study was to evaluate the clinical features of continuing viral conjunctivitis in Sudan during times of conflict.

Methodology: This is a prospective descriptive study that was launched after seeing an uncommon presentation of acute hemorrhagic conjunctivitis in people of all ages around the beginning of August 2024. **Results:** Subconjunctival hemorrhage (SCH) was observed in a total of 83 cases, with 76% being males and 95% being females. Swelling of the eyelids was observed in 82 patients, with 82.5% being males and 81% being females. Conjunctival edema was observed in a total of 79 patients, with 77.7% being males and 81% being females. The majority of the patients exhibited symptoms in both eyes, while 8% and 4% experienced symptoms in the left eye and right eye, respectively. **Conclusion:** This pandemic of viral conjunctivitis, which often begins in one eye and spreads to the other, can clear itself in a week or two, based on the typical clinical symptoms. Steroids and antibiotics work synergistically to alleviate symptoms and avoid bacterial infections.

Keywords: Epidemic, Conjunctivitis, Redness, Discharge, Subconjunctival Hemorrhages, Lid Swelling.

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INTRODUCTION

Conjunctivitis is a prevalent condition in Sudan. It often occurs sporadically and does not usually result in severe problems. However, when conjunctivitis becomes epidemic, it can lead to significant and distressing symptoms. In particular, if it progresses to keratoconjunctivitis, it may result in blindness. The epidemic conjunctivitis is characterized by intense pain, foreign body sensations, and swelling and bleeding in the upper tarsal conjunctiva. It can manifest in various forms, such as bacterial, allergic, and viral conjunctivitis. Viral conjunctivitis is responsible for around 80% of all instances of acute conjunctivitis. The main causative agents are adenovirus and herpes simplex, which contribute to its rapid spread and potential for a pandemic. Adenovirus is responsible for about 80% of viral infections and can induce swelling of the lid margin [1]. This form of conjunctivitis is acute and can be quickly resolved with proper management, unlike chronic keratoconjunctivitis, which has seasonal flare-

ups and is allergic in nature. Chronic keratoconjunctivitis has various types, including atopic keratoconjunctivitis, giant papillary conjunctivitis, permanent rhinoconjunctivitis, seasonal rhinoconjunctivitis, and others [2]. Additionally, conjunctivitis is a prevalent eye condition that results in redness of the eye and affects people of all ages and socioeconomic backgrounds. It has significant economic and social consequences [3]. Conjunctivitis is a prevalent condition that is commonly encountered in ophthalmology clinics worldwide. When managing a case of conjunctivitis, it is important to be aware of the warning signals for more serious problems within the eye, such as intense discomfort, impaired vision, and a sensation of having a foreign object in the eye [4]. This particular case of conjunctivitis differs from normal cases due to the presence of intense discomfort, the sensation of a foreign object, bleeding beneath the conjunctiva, and swelling of the eyelid and conjunctiva in the majority of patients. Bacterial conjunctivitis can lead to challenging problems that are difficult for physicians to treat. Unlike viral conjunctivitis, bacterial

conjunctivitis may or may not cause symptoms such as pain, itching, and discharge. However, viral conjunctivitis is typically linked with significant pain [5]. More than 50% of individuals with coronavirus conjunctivitis were found to have co-infections with various other pathogens, including bacteria. This indicates a public health concern [6].

MATERIALS AND METHODS

This is a prospective descriptive study that was launched after seeing an uncommon presentation of acute hemorrhagic conjunctivitis in people of all ages around the beginning of August 2024. The research was carried out at the Dr. Khalil Ophthalmology Center, located in El-Obeid, Sudan, specifically in the region of North Kordofan. This study encompasses all patients who present to the ophthalmology center, regardless of their age or gender. We created a questionnaire that covered clinical characteristics, treatment, and follow-up.

Ethical Consent: Every patient and child's parent explicitly agreed to participate in the study.

Ethical Approval: The Human Research Ethics Committee at MRCC approved the study's proposal (Approval Number: HREC 0007/MRCC.3/24).

Statistical Analysis

We imported the data sets into the statistical software for social sciences (SPSS Inc., Chicago, IL, version 24) to obtain the results. P-values less than 0.05

were considered statistically significant according to the chi-square test.

RESULTS

This study investigated the clinical appearance of 100 individuals during Sudan's current epidemic of conjunctivitis. Of the 100 patients, 63 were males and 37 were females, ranging in age from 1 to 75 years old, with a mean age of 35. Initially, all patients displayed redness and discharge. The most common discharge was purulent, followed by mucopurulent, yellowish, and greenish, with 49%, 37%, 8%, and 6%, respectively. 89 patients, including 57/63 (90%) males and 32/37 (86%) females, reported itching. 95% of the patients, including 58/63 (92%) males and 37/37 (100%) females, reported experiencing foreign body sensations. In 83 cases, 48 (76%) men and 35 (95%) women reported subconjunctival hemorrhage (SCH). 82 patients, comprising 52 (82.5%) men and 30 (81%) females, showed lid swelling. We detected conjunctival edema in 79 patients, including 49 (77.7%) men and 30 (81%) women. The majority of patients reported symptoms in both eyes, with the left and right eyes accounting for 88%, 8%, and 4%, respectively. Only males had right eye involvement, as Table 1 and Figure 1 demonstrate. Approximately 12 patients received simply antibiotics when the condition first appeared, while the remaining 88% received both steroids and antibiotics. After a follow-up of one week, approximately 88% of the patients showed clinical improvement, 6% showed no improvement, and 6 were absent (see images 1-4).

Table 1: Patient distribution by sex and clinical presentation

Variable	Males (n=63)	Females (n=37)	Total
Itching			
No	6	5	11
Yes	57	32	89
Discharge			
Yes	63	37	100
Foreign body sensation			
No	5	0	5
Yes	58	37	95
Discharge type			
Purulent	33	16	49
Mucopurulent	20	17	37
Yellowish	6	2	8
Greenish	4	2	6
Redness			
Yes	63	37	100
Sub conjunctival hemorrhage			
No	15	2	17
Yes	48	35	83
Lid swelling			
No	11	7	18
Yes	52	30	82
Conjunctival swelling			
No	13	7	20

Variable	Males (n=63)	Females (n=37)	Total
Yes	49	30	79
Involved Eye			
Right	4	0	4
Left	6	2	8
Both eyes	53	35	88
Treatment			
Antibiotic	9	3	12
Steroid + Antibiotic	54	34	88
Follow-up			
Improved	56	32	88
Not improved	4	2	6

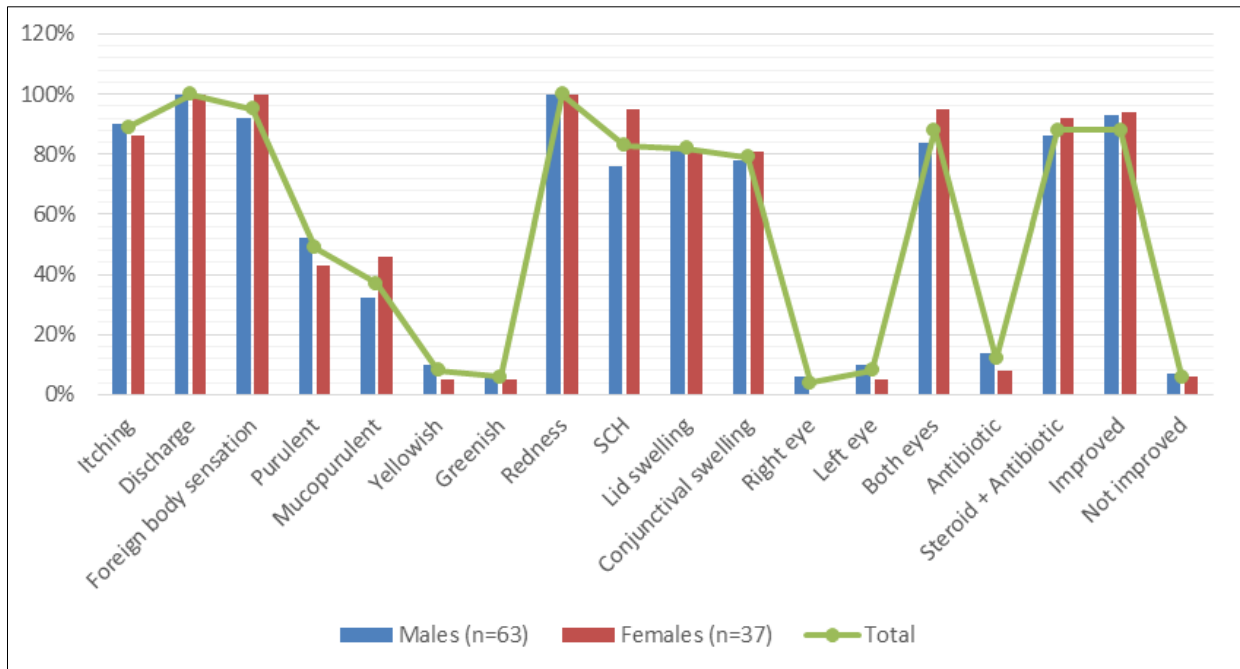


Figure 1: provides a description of the patients by sex and their clinical presentations

Table 2 and Figure 2 summarize the distribution of patients based on age and clinical presentation. The majority of patients were between 30-39 years old, followed by those over 50 and under 18 years old (23%, 22%, and 22%, respectively). Itching was most common among 30-39-year-olds, followed by ≥ 50 and ≤ 18 -year-olds: 23/23 (100%), 20/22 (91%), and 18/22 (82%). Discharge, redness, and alien body sensations were distributed evenly across all age groups.

The most common age group for subconjunctival hemorrhage was 19–29 years, followed by ≥ 50 and 40–49 years, with rates of 15/16 (93.7%), 20/22 (90.9%), and 15/17 (88%), respectively. 90.9% of cases of lid edema occurred in individuals aged 50 or older. Conjunctival edema is common among people aged 19–29, accounting for 93.7%. 75% of patients aged 30-39 reported involvement of the right eye.

Table 2: Patient distribution by age and clinical presentation

Variable	≤ 18 years	19-29	30-39	40-49	≥ 50	Total
Itching						
No	4	1	0	4	2	11
Yes	18	15	23	13	20	89
Total	22	16	23	17	22	100
Discharge						
Yes	22	16	23	17	22	100
Foreign body sensation						
No	1	1	1	1	1	5
Yes	21	15	22	16	21	95

Variable	≤18 years	19-29	30-39	40-49	≥50	Total
Discharge type						
Purulent	11	10	13	7	8	49
Mucopurulent	7	6	7	6	11	37
Yellowish	3	0	1	2	2	8
Greenish	1	0	2	2	1	6
Redness						
Yes	22	16	23	17	22	100
Sub conjunctival hemorrhage						
No	7	1	5	2	2	17
SCH	15	15	18	15	20	83
Lid swelling						
No	6	2	5	3	2	18
Yes	16	14	18	14	20	82
Conjunctival swelling						
No	6	1	7	3	3	20
Yes	16	15	16	14	18	79
Involved Eye						
Right	1	0	3	0	0	4
Left	3	1	0	3	1	8
Both eyes	18	15	20	14	21	88
Treatment						
Antibiotic	2	1	3	4	2	12
Steroid + Antibiotic	20	15	20	13	20	88
Follow-up						
Improved	18	16	21	14	19	88
Not improved	2	0	2	1	1	6

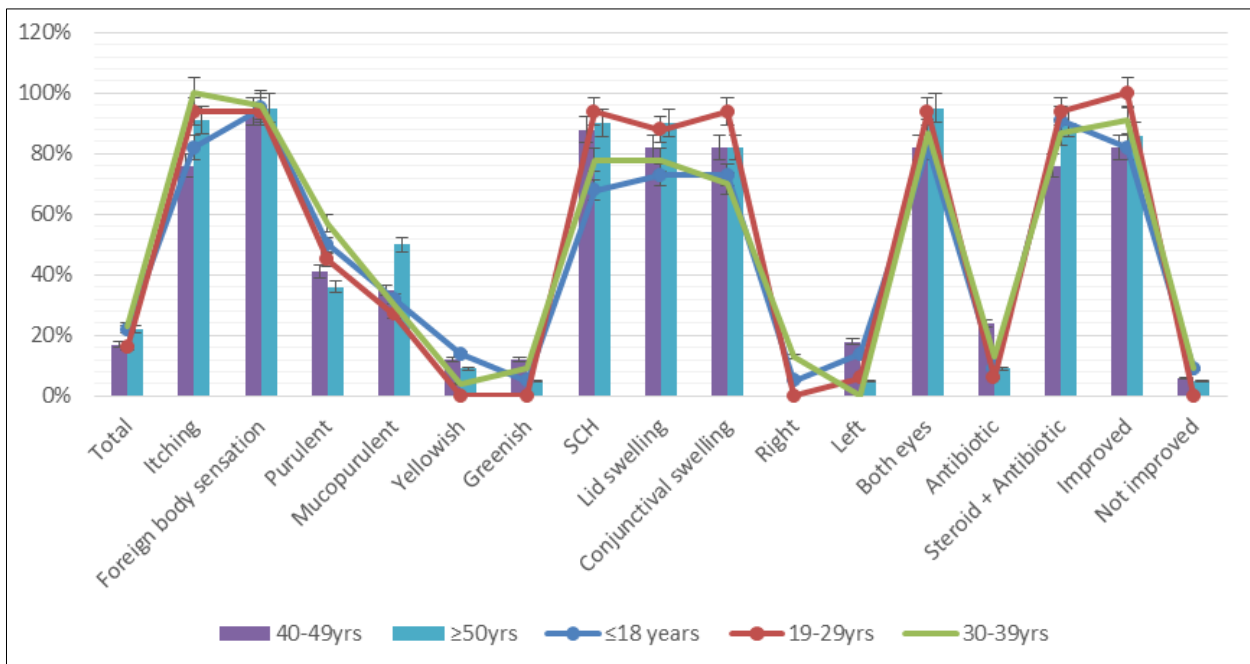


Figure 2: Description of the patients by age and clinical manifestations



Image 1: Subconjunctival hemorrhage



Image 2: Conjunctival swelling



Image 3: Lids swelling



Image 4: Mucopurulent discharge

DISCUSSION

Sudan is currently facing a severe crisis in all aspects of life due to the ongoing, devastating conflict that began in 2023. The conflict has severely damaged the health system, resulting in a widespread outbreak of various maladies, including ocular diseases. Currently, there is an ongoing outbreak of viral conjunctivitis that has spread throughout almost the entire Sudan state. Nevertheless, our objective in this particular investigation was to emphasize the clinical characteristics of the ongoing pandemic in the state of North Kordofan, located in central Sudan.

One of the most noticeable clinical symptoms observed in these individuals was subconjunctival bleeding, which affected over 80% of the patients. Furthermore, we observed that this SCH continued to exist even after a full recovery period of three weeks. The main cause of acute hemorrhagic conjunctivitis is typically enterovirus 70, which can lead to widespread and severe subconjunctival hemorrhage (SCH). However, the incidence of this disease is decreasing. Enterovirus 70 and a type of coxsackievirus A24 cause acute hemorrhagic conjunctivitis. It is characterized by the sudden and intense development of extremely painful conjunctivitis and bleeding under the conjunctiva. The illness is often harmless and typically disappears after a period of five to seven days. However, approximately one in every 10,000 individuals infected with enterovirus 70 may develop radiculomyelitis, a paralysis akin to polio. Viral conjunctivitis is the primary cause of infectious conjunctivitis, accounting for up to 80% of cases [9-1]. In this study, more than 80% of the patients experienced swelling of the eyelids. There are various causes for sudden swelling of the eyelid, such as infection, inflammation, degeneration, tumors, and trauma [11]. In my study, 95% of the patients experienced a foreign body sensation. Typically, patients exhibit a quick onset of this sensation, along with symptoms such as red eyes, itching, sensitivity to light, burning, and watery discharge. In my study, the majority of patients had purulent discharge (49%) and mucopurulent discharge (37%), indicating the presence of bacterial infections. Patients with bacterial conjunctivitis exhibit symptoms similar to viral conjunctivitis, but with mucopurulent discharge and crusting of the eyelids upon waking in the morning [12]. In addition, certain patients with concurrent bacterial infections may experience yellow and green discharge. Regarding the affected eye, HSV conjunctivitis often affects just one eye and is characterized by bleeding beneath the conjunctiva, discharge containing pus, and slight inflammation of the conjunctiva. Generally, HSV conjunctivitis resolves within 4–7 days, unless problems arise. The user's text is "[13]." In this particular study population, the disease begins in one eye and quickly progresses to the second eye. Additionally, the majority of patients see a resolution of symptoms within a timeframe of 3 to 7 days. In terms of itching, 89% of

patients reported experiencing this symptom. As previously stated, patients feel a foreign object in their eyes and begin to touch it. Redness is a common characteristic of all types of conjunctivitis. In September 2023, a study in Pakistan collected data from 86,133 patients, confirming that this virus affects both adults and children equally. It is associated with several clinical symptoms, including stinging red eyes [14]. Additionally, the presence of severe conjunctival redness, a swollen eyelid, and discomfort strongly indicate the likelihood of adenoviral infections [15]. Regarding the treatment of viral conjunctivitis, our recommendation is to apply hot compresses and administer a mix of antibiotic and corticosteroid medications. We observed a significant improvement in symptoms in 88% of the patients within a span of 3-7 days. Corticosteroid eye solution serves as a remedy for viral conjunctivitis. Moreover, promptly identifying viral conjunctivitis reduces the length of time that the symptoms persist. On follow-up, 88% of patients had improved symptoms and indicators.

IN CONCLUSION

Based on the prevalent clinical features, it appears to be an outbreak of viral conjunctivitis. The infection usually begins in one eye and then spreads to the other, but it typically resolves within one to two weeks. Using steroids can effectively reduce symptoms and prevent bacterial coinfection when used in conjunction with antibiotics.

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