

# Clinical symptom and sign characteristics of patients with Conjunctivochalasis

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## ABSTRACT

Conjunctivochalasis (CCh) is a condition characterized by redundant, loose, and non-edematous conjunctival folds that often located in inferior bulbar conjunctiva. CCh often asymptomatic but also can cause many symptoms. The symptoms of CCh are often connected to delayed tear clearance or tear film instability. CCh is often overlooked in clinical practice; therefore, it is important to recognize this condition to differentiate it from chronic eye irritation and epiphora due to other causes. This research is to evaluate the clinical characteristics of patients with Conjunctivochalasis (CCh). A total of 26 people with Conjunctivochalasis were enrolled in this retrospective investigation. The study included 52 eyes from 40 cases. Ages ranged from 46 to 77 years, with a mean age of 64 years. In this study, all CCh sites were found in the inferior conjunctiva and more in the temporal region (75%). The prevalence of CCh was mostly female (88.5%) and occurred in patients with an average age of 64±7 year. The most common complaints of CCh patients were eye pain (42%) and dryness (38%). Clinical examination results obtained bilateral CCh more than unilateral, which is 53.8%. Severity of first grade CCh was found in 50% of the sample eyes. Schirmer examination results of less than 5 mm and 5-10 mm obtained the same results of 35%. Fluorescein test results were found to be positive in 57.5% of eyes. While the most TBUT results were obtained in less than 5 seconds, which amounted to 67.5%.

**Keywords:** conjunctivochalasis; epiphora; dryness; eye pain; blurry vision.

## INTRODUCTION

Conjunctivochalasis (CCh) is a conjunctival condition characterized by loose and excessive conjunctival folds, usually in the inferior bulbar conjunctiva of both eyes. CCh is often asymptomatic; symptoms of CCh may be related to tear film instability and/or delayed tear clearance. Symptoms of CCh can include the sensation of a foreign body, hyperemia, subconjunctival hemorrhage, eye pain, and blurred vision, especially when looking down (downgaze) [1]. The pathogenesis of CCh is not known with certainty, it is thought to be related to the aging conjunctiva, unstable tear film, mechanical friction, inflammation of the ocular surface, and the duration of tear rinsing [2]. Medical management for symptomatic CCh includes lubrication and anti-inflammatory drugs. If medical treatment fails, surgical procedures may be considered such as conjunctival cauterization or redundant conjunctival excision, with or without amniotic membrane transplantation [2]. The diagnosis of CCh is often overlooked in clinical practice because the symptoms are non-specific, therefore it is important to recognize this condition to differentiate it from chronic eye irritation and epiphora due to other causes. It is important to understand the clinical signs and symptoms of CCh patients and differentiate them from other diseases so that they can be treated appropriately. This study aimed to evaluate the clinical characteristics of patients with CCh.

## RESEARCH METODOLOGY

This research is descriptive retrospective study. This study was conducted at Haji Hospital, East Java. Province from January to March 2022. The population in this study were all patients diagnosed with conjunctivochalasis and seeking

treatment in department of ophthalmology at Haji Hospital Surabaya which were recorded in medical records from January to December 2021. The study included 52 eyes from 40 cases. The sample in this study were patients with a diagnosis of conjunctivochalasis who met the research criteria, with inclusion criteria which is all patients with conjunctivochalasis recorded in the medical record from January 2021 to December 2021 and exclusion criteria are acute infection of the eye; post intra or extra eye surgery within the last 6 months; severe conjunctival or corneal abnormalities.

Researchers prepare data collection sheets, go to the medical record room to look for data on patients with conjunctivochalasis (CCh) and write down the results on a data collection sheet containing patient identity data (age and gender), eye complaints, results of clinical examinations, location, and grade of CCh, schirmer test, fluorescein test, TBUT.

The diagnosis of CCh uses symptoms and clinical examinations established by an ophthalmologist recorded in the medical record. The examination carried out to diagnose CCh using a slit lamp showed conjunctival prolapse or folds in the nasal, middle (central) and or temporal parts. Furthermore, CCh was evaluated based on the number of folds and their position on the edge of the eyelids, whether they were in the nasal, central, or temporal areas. CCh is classified based on the classification of Hoh., et al, 1995[3]. Other signs of CCh were also evaluated, such as the Schirmer test, Break Up Time (BUT) test and fluorescein staining.

The tear breaks up time was used to determine the stability of the tear film and dry eye due to evaporation. On TBUT examination, sodium fluorescein dye was added to the fornix and the tear film was observed with a slit lamp and the patient was asked to hold the blink until a dry spot was seen. Generally, >10 seconds is considered normal, 5 to 10 seconds, is considered borderline and <5 seconds is considered less [4]. The Schirmer test was used to assess tear production, the tip of the strip was bent at a 90-degree angle and placed on the temporal third of the inferior fornixes in both eyes. The patient is instructed to look up. After both strips are attached, the patient is asked to gently close the eyes for 5 minutes. After 5 minutes, the patient is asked to open both eyes and look up so that the test strip can be removed. The Schirmer test score is determined by the length of the wetted strip area (using the scale on the strip). Scores > 10 mm in 5 minutes are considered normal, scores < 5 mm in 5 minutes are considered poor [5]. Fluorescein test is used to determine the presence of defects in the corneal epithelium. Fluorescein strip moistened with normal saline, then placed on the conjunctiva of the inferior fornix. The patient is asked to blink several times so that the dye is evenly distributed. Epithelial defects are examined with a slit lamp using a cobalt light [6]. This research was approved by Haji General Hospital Ethics Committee (Ref. No. 073/01/KOM.ETIK/2022)

**RESULTS**

The research was conducted from January to March 2022, starting from making research proposals, licensing, collecting data and reporting research results. The data collected came from the medical records of the Haji Hospital, East Java Province on patients with a diagnosis of Conjunctivochalasis (CCh) during January to December 2021. From the data collected, a sample of 40 eyes was obtained in 26 patients. Demographic data in table 5.1 shows that from 26 patients, most of the CCh were found in women, namely 23 people (88.5%), while in men it was found 3 people (11.5%). The age range of patients in this study was 46-77 years with a mean age of 64 ± 7 years.

**TABLE 1:** Demographic table of CCh patients

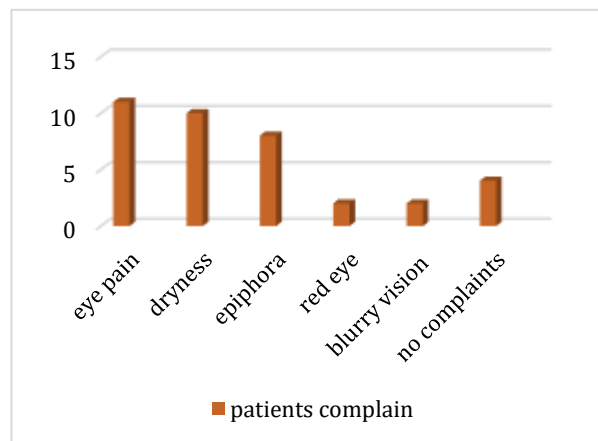
	Grade 1 CCh	Grade 2 CCh	Grade 3 CCh
<b>Age</b>			
Mean	60,8 ± 7,5 years	64,8 ± 6,2 years	67,7 ± 6,7 years
Range	46-70 years	52-74 years	60-77 years
<b>Gender (eyes)</b>			
Women	18	12	4
man	2	1	3
<b>CCh Location (eyes)</b>			
Temporal	15	9	6
Nasal	1	1	0
Central	4	3	1

Table 1 shows that CCh grade 1 obtained half of the total sample eyes, namely 20 eyes, while CCh grade 2 and grade 3 were 13 eyes (32.5%) and 7 eyes (17.5%). Based on gender, CCh in women obtained CCh grade 1 which was 53%, while CCh grade 2 and grade 1 were 35% and 12%, respectively.

This result is different from that obtained in male patients, the highest number of CCh was found in grade 3 by 50%, while grade 1 and grade 2 were 33% and 17%, respectively.

In this study, all CCh locations were found in the inferior bulbar conjunctiva, which was divided into three parts, namely temporal, nasal and central. Based on the location, the most CCh was found in the temporal part, namely 75%, while the CCh in the central and nasal parts were 20% and 5%, respectively. Of the 26 patients, 14 cases were bilateral (53.8%) and 12 cases were unilateral (46.2%). In the case of unilateral CCh, the highest number was found in the right eye, which was 75%.

**FIGURE 1:** Diagram of CCh patients' complaint



Based on the complaints of CCh patients depicted in diagram 5.1, the most common complaints were eye pain (11 people) and dryness (10 people). Another complaint was that epiphora was found in 8 people, while the complaints of red eyes and blurry vision were found in 2 people each. There were 8 patients with 2 complaints and 1 patient with 3 complaints. Meanwhile, there were 4 patients without complaints.

**TABLE 2:** Table of CCh patient's examination results

	CCh Grade 1	CCh Grade 2	CCh Grade 3
<b>Schirmer test I</b>			
<5mm	7	6	1
5-10mm	5	5	4
>10mm	8	2	2
<b>Fluorescein test</b>			
+	9	10	4
-	11	3	3
<b>Tear Break Up Time</b>			
<5 second	10	12	5
5-10 second	7	3	2
>10 second	1	0	0

Table 5.2 shows that the results of the Schirmer I test were less than 5 mm in 35% of the eyes, as well as the results of the 5-10 mm Schirmer test, which was 35% of the eyes, while the Schirmer test of more than 10 mm was found in 30%. Fluorescein test results were positive in 57.5% eyes.

While the most TBUT results were obtained for TBUT results of less than 5 seconds, namely 67.5%, for 5-10 seconds TBUT results were obtained as much as 30% and TBUT results for more than 10 mm were obtained for 2.5%.

## DISCUSSION

Conjunctivochalasis (CCh) is a chronic conjunctival disorder that most often affects the elderly, and its prevalence increases with age [7]. Although CCH is a common condition in clinical practice, especially in elderly patients, it is usually an overlooked finding [8]. In this study, the mean age of CCh patients was  $64 \pm 7$  years, in another study the mean age of CCh patients was  $65 \pm 10$  years [1]. In this study, the prevalence of CCh was more than half (54%) in elderly patients, namely age 60-69 years [9]. This is in accordance with the theory that in older people, aging skin can lead to a reduction in the subconjunctival connective tissue. These tissue changes can reduce the attachment of the bulbar conjunctiva to the sclera, resulting in conjunctival weakness. This loose conjunctiva can then lead to causes chronic mechanical friction between the eyelids and bulbar conjunctiva during eye movement and blinking [2]. In some studies, the prevalence and severity of CCh tend to be higher in women than in men. Of the 26 CCh patients in this study, 88.5% of cases were found in women. This is also consistent with other study which found the prevalence of CCh in women of 53% [1] and 80.5% [10]. CCh is usually found bilaterally in the inferior conjunctiva [11]. In this study, most CCh were also obtained bilaterally as many as 53.8% of cases while unilateral cases were obtained as many as 46.3%. These results are also in accordance with those obtained in other study although more reports were found, namely 66.6% of bilateral CCh cases [1].

Based on the CCh classification proposed by Hoh., et al, 1995 [3], in this study it was found that 50% were CCh grade 1, 32.5% were CCh grade 2 and 17.5% were CCh grade 3. In a hospital-based study found significantly lower grade CCh in the central conjunctiva than in the nasal and temporal areas in all age groups, this may be because the central conjunctiva is smaller than the nasal and temporal. In this study, most CCh occurred in the temporal part (75%), while grade 3 CCh in this study was found to be 85% in the temporal part [12].

Conjunctivochalasis (CCh) can cause a spectrum of symptoms, ranging from mild discomfort in the mild stage to obstruction of tear outflow in the moderate stage and exposure keratopathy with subsequent vision loss in the severe stage [7]. Symptoms of CCh are often non-specific, most patients present with complaints of dry eyes, irritation, discomfort, blurred vision, eye fatigue, pain, burning, foreign body sensation, and pseudoepiphora. The data in this study showed that the most common complaints in the eyes of CCh patients were eye pain (42.3%) and dry eyes (38.5%). In another research found that the most common complaint was dry eyes (50%) [1]. Dry eye symptoms may occur secondary to an unstable precorneal tear film in CCh. One study showed that nasal CCH caused more dry eye symptoms and eye pain than non-nasal CCH [2]. In this study, it was also found that the most complaints were eye pain and dryness, but CCh was obtained more in the temporal area. This requires further investigation starting from the history of complaints to clinical and supporting examinations. So that it can identify whether CCh is concurrent with dry eye syndrome, or before the diagnosis of CCh there has been dry eye syndrome that is exacerbated by the presence of CCh, are there other eye diseases such as anterior blepharitis, meibomian gland dysfunction or allergic eye diseases that can have symptoms similar to CCh. A more thorough investigation is needed to differentiate between CCh and these eye disorders.

In dry eye syndrome complaints tend to get worse as the day progresses due to progressive exposure. In contrast, patients with CCh tend to experience worsening of symptoms in the morning after waking. Patients with CCh complain of dry eyes, because the conjunctival folds increase during downgaze, the symptoms of dryness will increase. In contrast, because the interpalpebral exposure zone is increased during the upgaze, patients with dry eye syndrome complaints tend to worsen with an upward glance. The increased blinking frequency in CCh patients often causes the conjunctiva to fold further at the 6 o'clock position, which causes the eyes to become lumpy and dry. On the other hand, increasing the frequency of blinking will stabilize the tear film and improve symptoms in dry eye syndrome [1]. A history of such complaints was not obtained at the time of data collection, therefore further investigation is needed in the next CCh study.

The etiology of conjunctivochalasis is still not fully elucidated, although age and chronic inflammatory changes in the conjunctiva have been proposed as contributing factors in conjunctivochalasis [13]. The inflammatory theory suggests that disturbed tear distribution results in degradation of the extracellular matrix, leading to accumulation of degrading enzymes in tears and, consequently, inflammatory changes resulting in conjunctival weakness [14]. External factors in the occurrence of CCh are very prominent, especially dust exposure. In a study found that participants with LIPCOF grade 2 CCH were more likely to be exposed to dust than those exposed to CCH grade 1. It is well known that environmental dust is associated with increased exposure to foreign bodies in orbit, and eye irritation resulting in can trigger inflammation of the eye [15].

Patients with CCh are often described with dry eyes, it is said that CCH does not cause dry eyes but produces dry eye symptoms [16]. The Schirmer test is widely used to determine concomitant dry eye in patients with CCh [17]. In this study, 30% of the eyes of CCh patients had normal Schirmer I result, namely  $>10$ mm, most of the patients with normal Schirmer results (66.7%) were eyes with CCh grade 1. While the Schirmer results  $<5$  mm was obtained as many as 35% eye. Schirmer's average yield is 7 mm. in other study the average Schirmer result was the same, namely 7 mm, but in that study all patients' eyes had more than 5 mm Schirmer results [1]. Based on clinical examination, the diagnosis of CCh was confirmed by slit lamp examination and fluorescein staining. Slit lamp examination clearly shows an exaggerated conjunctival fold over the inferior eyelid margin forming a fold that moves with blinking. In most cases, it is bilateral and is found in the temporal, central and/or nasal areas of the lower eyelid. In more severe cases CCh can spread throughout the lower eyelid. In this study, all CCh were found in the inferior conjunctiva. Meanwhile, fluorescein staining showed positive fluorescein results in 57.5% of eyes. This result is smaller than the other which obtained positive fluorescein results in 80% of eyes [1]. Previously CCh was found in the lower eye but in a new study CCh was also found in the upper eye. Thus, the fluorescein test is the best in terms of delineating the tear meniscus, especially with the aid of a special filter [18]. Patients with CCh are often treated with artificial tears because they usually present with dry eye symptoms, with artificial tears to reduce eye complaints and repair defects in the corneal epithelium. However, the treatment of dry eye is not satisfactory [8]. Asymptomatic CCh does not require treatment, but if CCh is symptomatic then treatment is required. Medical treatment is the mainstay of symptomatic CCh, but in patients who do not respond to medical treatment, surgical intervention may be required [2].

Tear film stability can be assessed by measuring the tear film break-up time (TBUT), which may indicate a shorter time in CCh patients. The results of TBUT in this study were obtained at most < 5 seconds, namely 67.5% of eyes. The average TBUT is 6.7 seconds. The shortest TBUT was 2 seconds which was obtained in 2 eyes, one eye with first grade of CCh and second grade of CCh. In other study the average TBUT was 7.6 seconds and the shortest was found to be obtained at third grade of CCh [1]. This short TBUT result is possible because CCh can contribute to tear film instability due to tear lipid layer deficiency caused by inadequate spread of the lipid layer on the ocular surface [2].

### CONCLUSION

Conjunctivochalasis (CCh) is a chronic conjunctival condition characterized by loose, redundant, and non-edematous conjunctival folds, especially in the inferior bulbar conjunctiva and occurring more frequently on the temporal side. In this study, all CCh locations were found in the inferior conjunctiva and more in the temporal region (75%). The prevalence of CCh was mostly in women (88.5%) and occurred in patients with a mean age of 64 ± 7 years.

The most common complaints from CCh patients were eye pain (42%) and dryness (38%). Results Clinical examination showed more bilateral CCh than unilateral, as much as 53.8%. The severity of first grade CCh was found in 50% of the eyes sample. On the results of the Schirmer examination less than 5 mm and 5-10 mm, the results were the same, namely 35%. Fluorescein test results were positive in 57.5% eyes. While the most TBUT results were obtained less than 5 seconds, which was 67.5%.

Further research needs to be carried out with a different study design, by examining and analyzing various risk factors and other eye conditions associated with conjunctivochalasis. Further research is also needed to elucidate the specific pathogenesis mechanism and its contribution to each CCh condition specifically.

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