

Chronic epiphora secondary to ocular meibomianitis

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继发于睑板腺炎的慢性流泪

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摘要

目的: 阐述慢性流泪与睑板腺炎的关系,探讨治疗睑板腺炎对改善慢性流泪症状的疗效。

方法: 对美国 OHSU 的 Casey 眼科研究所 2000/2009 年间 1000 例流泪患者进行回顾性研究。其中 206 (20.6%) 例患者通过裂隙灯检查被诊断为睑板腺炎,诊断标准包括:睑板腺功能障碍,睑缘炎,睑缘毛细血管扩张,浅层点状角膜病变。治疗包括保持眼睑清洁,使用人工泪液,睑缘按摩和热敷,全身口服抗生素和眼部抗生素点眼,皮质类固醇点眼,饮食中补充 Omega-3 等治疗。

结果: 所有患者中,206 例 (20.6%) 患者被诊断为睑板腺炎(平均年龄 65.8 岁,平均流泪时间是 2.78a)。其中 196 例 (95%) 是白人;女性 106 例 (51.5%), 男性 100 例 (48.5%)。平均随访 5.07mo。通过治疗睑板腺炎,症状得到改善 152 例 (73.79%)。症状未改善 43 例 (20.87%)。在 43 例患者中 14 例 (6.81%) 患者未找到治疗失败的原因,29 例 (14.08%) 患者不愿做长期治疗而导致治疗失败。失去随访 11 例 (5.34%)。

结论: Casey 眼科研究所流泪患者中 20.6% 患有睑板腺炎,通过治疗 73.78% 患者流泪症状改善。我们认为:流泪患者需注意其睑板腺情况,一旦诊断为睑板腺炎则应积极治疗;其次通过各种手术治疗仍然流泪的患者,眼科医生需注意其睑板腺的情况。

关键词: 眼表;溢泪;流泪;睑板腺炎;睑缘炎

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Abstract

• **AIM:** To investigate the relationship between chronic epiphora and meibomianitis, and to explore the efficacy of the meibomianitis treatment to improve chronic tearing.

• **METHODS:** One thousand chronic epiphora patients chart review in Casey eye institute during 2000 - 2009. Review of 206 (20.6%) chronic epiphora patients who underwent slit lamp examination were diagnosed meibomianitis. Diagnostic criteria were meibomian gland dysfunction, blepharitis, lid margin telangiectasia and hyperaemia punctuate superficial keratopathy. Treatment included maintenance of lid hygiene, use of artificial tears, systemic and topical antibiotics, warm and moist compresses, topical corticosteroid and diet supplementation with Omega-3 fatty acids.

• **RESULTS:** Among all the patients, 206 (20.6%) meibomianitis patients (average age 65.8 years, average tearing time 2.78 years). White patients 196 (95%); female 106 (51.5%), male 100 (48.5%). Average follow up time was 5.07mo. 152 (73.79%) of 206 meibomianitis patients with tearing got improved through treatments. 43 (20.87%) patients were treated without improvement. The failure reasons cannot be found in 14 (6.81%) of 43 patients. 29 (14.08%) of 43 patients with chronic epiphora do not want to treat for a long time, which cause the treatment failure. 11 (5.34%) of 206 meibomianitis patients lost to follow up.

• **CONCLUSION:** The patients who presented to our office for the tearing 20.6% had meibomianitis. Through treatment of meibomianitis, tearing improved 73.78%. So patients with meibomianitis should treat it actively. Some tearing patients after the surgery still tearing should pay attention to treat meibomianitis.

• **KEYWORDS:** ocular surface; epiphora; tearing; meibomianitis; blepharitis

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INTRODUCTION

There is little published information on the relationship between chronic epiphora and meibomianitis. The cause that leads to epiphora is complex and dependent on many factors^[1]. Some epiphora can be the result of mechanical failings in the lacrimal for the drainage system. Common causes for epiphora are those of punctual stenosis and lacrimal duct obstruction, ectropion and entropion. Epiphora also due to reflex tearing, for instance, the emotions can make cry.

Conjunctivochalasis can lead to the appearance and function of a “pseudo plug” because of delayed tear clearance. Also, epiphora may commonly be a manifestation of an ocular surface disorder such as ocular allergy or ocular rosacea^[2-4]. Although there are different reasons to cause epiphora, the symptom is the same. We reported the relationship between chronic epiphora and meibomianitis. The meibomianitis treatment is very important, which is able to improve chronic tearing.

SUBJECTS AND METHODS

One thousand chronic epiphora patients reviewed in Casey eye institute during 2000 – 2009. Among all the patients, 206 (20.6%) patients who underwent slit lamp examination were diagnosed meibomianitis. Diagnostic criteria were meibomian gland dysfunction, blepharitis, lid margin telangiectasia and hyperaemia punctate superficial keratopathy. Treatment includes maintenance of lid hygiene, use of artificial tears, systemic and topical antibiotics, warm and moist compresses, topical corticosteroid and diet supplementation with Omega-3 fatty acids.

RESULTS

Twenty point six percent of all the patients who presented to our office for tearing had been diagnosed with the meibomianitis. During the follow up time (5.07 months on average), 152 (73.78%) of 206 meibomianitis patients with tearing got improved through treatments. Forty-three patients (20.87%) were treated without improvement. The failure reasons cannot be found in 14 (6.81%) of 43 patients, 29 (14.08%) of 43 patients with chronic epiphora do not want to treat for a long time, which cause the treatment failure. Eleven (5.34%) of 206 meibomianitis patients lost to follow up.

DISCUSSION

A review of the anatomy and physiology of tear production highlights some of the difficulties and complexities in treating these conditions. The principle structure of tear producing and drainage system of the eye is the lacrimal apparatus which comprises the lacrimal gland, lacrimal puncta, lacrimal canaliculi, lacrimal canal, lacrimal sac and naso-lacrimal duct. There is a mechanical process which moves the tears across the surface of the eye and into the lacrimal apparatus. The movement of tears is achieved by the process of ‘blinking’ which produces a positive pressure under the eye lids in the palpebral space. Thus when the eye lids are closed, tears are forced towards the two drainage channels known as the upper and lower lacrimal canaliculi. A slight negative pressure is created in the lacrimal canal when the eye lid is opened which draws the tears and any debris into the lacrimal sac. In effect, there is a constant ‘push’ and ‘pull’ on the flow of tears with each ‘blink’^[5]. This is the ‘lacrimal pump’. The drainage channels require the upper and lower lacrimal canaliculi to be in contact with the surface of the eye. For example, occasionally epiphora can be the result of mechanical failings in the lacrimal drainage system. The punctum is too small to adequately drain the tears from

the eye, mucin filaments obstruct the canaliculi and/or punctal stenosis or a blocked lacrimal duct. A simple dilation and irrigation with saline will alleviate the symptoms. More complex surgery is required either to make the punctal opening wider or to refashion the lacrimal duct. Conjunctivochalasis is due to a “pseudo” blockage of the puncta from the overhanging conjunctiva lead to the appearance delayed tear clearance^[6]. Removal of the excess conjunctiva may allow for better drainage and alleviation of the epiphora. In addition, the lid margins also need to be in contact with the surface of the eye and be able to meet together when the eye is closed. It also assists in moving debris across the eye either to form tears and be ‘cried’ out or swept into the lacrimal drainage system and discharged into the nasal passages, ectropion can fail to move tearing to the lacrimal drainage system. The loose skin of the lower lid can be excised will alleviate the symptoms. The tear film comprises three layers produced by the glands in the eyelids, conjunctiva and cornea^[7]. The function of each layer is integral to the proper functioning of the tear film as a whole. To this three layers, lipids from the meibomian and Zeis glands in the eyelids and mucin from goblet cells in the cornea and epithelial cells in the conjunctival epithelium, the aqueous layer produced by the lacrimal gland. Essentially the mucin layer aids in keeping the tear film in place rather like a ‘bio-glue’. The water layer allows the eye to remain ‘moist’ and helps the cornea maintain good refractive function. The lipid layer prevents the water layer from evaporating. The presence of lysozyme and lactoferrin help inhibit the growth of bacteria. Blepharitis, an inflammatory condition of the eyelids associated with symptoms including burning, irritation of the eyelid crusting, injection of the eyelid margin and conjunctiva, is one of the most common diseases routinely seen by ophthalmologists^[8-10]. With up to 20% of adults over the age of 45 reporting some discomfort, the exact cause of blepharitis is unknown^[11]. Blepharitis remains difficult to diagnose and treat. Although an underlying inflammatory response is evident, it is thought that changes in tear physiology, stability, and the ocular surface also play a role. Blepharitis may be divided into anterior and posterior forms. Anterior blepharitis around the mucocutaneous junction is characterized by eyelids crusting, styes, and collarettes at the base of the lashes. It may be associated with staphylococcal infection, seborrhoea infection, or a mixture of both. Posterior blepharitis is most commonly linked with various disorders of the meibomian gland and is caused by inflammation of the meibomian glands due to ductal hyper keratinization or inspissations of secretion. Extensive work by Mathers *et al*^[12] has shown this theory in humans. The most common changes associated with posterior blepharitis are those associated with the meibomian glands. Along the margin of the lids there are a series of small sebaceous glands called the meibomian glands^[13]. Meibomian gland secretions help keep the eye moist and protect the tear film from evaporation. This dysfunction of the meibomian glands is the

most common cause of increased evaporation of the tear film. The symptoms are insidious in onset, as with anterior blepharitis, with patients often complaining of sore red eyes. However, these symptoms generally vary throughout the day with patients feeling that symptoms are worse in the morning due to inflammatory mediators attacking the anterior surface during sleep. Studies on both rabbits and humans have attempted to show correlation between meibomian gland dysfunction and evaporative dry eye, including hyperaemia and telangiectasia, ultimately leading to fibrosis of the meibomian gland. Earlier work on rabbits reported that cauterization of the meibomian gland orifices stopped meibum delivery to the ocular surface. This showed a rapid increase in the evaporation of the tear film, indicating that meibomian glands are vital in the production of the outer tear film lipid layer. They reported that the loss of meibomian glands increases tear evaporation rate as well as decreasing tear production and increasing tear osmolarity^[14]. If these fail to produce sufficient lipids or these lipids cannot reach the surface of the eye, the oils that are produced become thicker (looking like toothpaste). Although there are many reasons why the glands can become clogged, one common cause may be hormonal changes in estrogen levels, can cause a thickening of the oils. The changes of estrogen levels also cause a proliferation of staphylococcal bacteria that normally thrive on the ocular surface^[15]. These bacteria invade the meibomian glands and colonize there. In this condition small concretions collect around the base of the eyelashes and can cause irritation leading to a low level inflammation^[16]. This can also lead to the meibomian glands becoming blocked producing a chalazion or lump on the eye lid or if it is a superficial gland (Zeis) then a sty will form. Both of these conditions will further reduce the efficient working of the tear film by distorting the anatomy of the eye. The double trouble caused by the thickening of the oils plus the bacteria gradually decreases the secretion of oils from the glands. Long term chronic inflammation of the eye lids can cause meibomianitis, a deterioration of the tear film, dysfunction and inflammation of these glands. Meibomianitis can be diagnosed during your regular eye examination, so there are no special tests required, depending on the severity of the condition^[17,18]. The result of meibomian gland dysfunction, the tears will evaporate before they have cleaned the eye effectively which will cause the lacrimal gland to produce more aqueous tears. Treatment usually consists of both topical and oral antibiotics (usually tetracycline, doxycycline or erythromycin) to help break down the thickened lipid secretions^[19]. Moreover, in order to help restore the function of the meibomian gland, the oily secretions should always be kept from solidifying. Warm and moist compresses used 2–3 times a day help melt the lipid “plug” and allow the antibiotics to penetrate the meibomian glands. Another technique in the treatment of meibomianitis is the daily use of special eyelid scrubs to reduce debris on the lids and help unclog pores. Dietary helps with the meibomianitis treatment^[20,21]. Current research about

diet supplementation with Omega–3 fatty acids indicates that they can stabilize inflammation and help restore normal oils. Omega–3 fatty acids are essential fatty acids that body can't produce – body must obtain them from diet. The two best sources for omega–3 fatty acids are fish oil and flaxseed oil. Studies have shown that people with meibomianitis, when given Omega–3 supplements, experience an improvement in the oil layer covering their tear films. In our case, 206 meibomianitis patients with chronic epiphora who treated the meibomianitis got improved 73.78%. Eighteen (8.74%) among 206 meibomianitis patients with chronic epiphora on presentation to Casey eye institute, the patient underwent treatment of chronic epiphora with surgery before their meibomianitis was thoroughly addressed. They underwent lacrimal dilation and irrigation and they underwent different surgery, including bilateral dacryocystorhinostomy with subsequent John tube placement, removal of the excess conjunctiva, punctoplasty allow for better drainage and alleviation of the epiphora. The tearing was unchanged several months after surgery. Casey eye institute examination had significant papillary reaction with diffuse telangiectatic vessels along the eyelid margins. A diagnosis of meibomianitis was made. Through treatment, several weeks later, their symptoms were improved. Surgery and meibomianitis were treated at the same time, no improved were 43 (20.89%) of 206 patients with chronic epiphora. The failure reasons cannot be found in 14 (6.81%) of 43 patients. Indeed the management is complicated due to a number of factors, 29 (14.08%) of 43 patients with chronic epiphora do not want to treat for a long time, which cause the treatment failure. 11 (5.34%) of 206 patients lost to follow up.

Meibomianitis is a complex interaction of various factors^[22], including abnormal lid margin secretions, microbial organisms, and abnormalities of the tear film. The main treatment is an eyelid hygiene, which need to be continued long time, some patients cannot take a long time to treat their eyelid, so always cause the treatment failure. Topical antibiotics are used to reduce the bacterial load. Topical corticosteroid preparations may be helpful in patients with the inflammation. Some meibomianitis can present with a range of signs and symptoms, and its management can be complicated by a number of factors. Our recommendations of careful lid hygiene possibly combined with the use of topical antibiotics, with or without topical steroids. Systemic antibiotics may be appropriate in some patients.

In conclusion, it is important to consider a differential diagnosis before pursuing invasive therapeutic options. If the patient has the meibomianitis, we should treat it. Some tearing patients after the surgery still tearing should pay attention to treat the meibomianitis.

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