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Original Article

A Case of Absence of Meibomian Glands in the Lower Eyelids of A Middle-Aged Female in Abuja, Nigeria

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Abstract

The absence of the Meibomian gland is a rare cause of evaporative dry eye disease. A 45year old Lady, a known patient of our clinic whom we have been managing for allergic conjunctivitis for the past 5 years, started complaining of her eyes feeling dry and foreign body sensation 2 years ago. Her ocular surface disease index was 12.5, dry eye symptom score was 7 out of 14. She had no Meibomian orifices on her lower lid margin, but the upper lid orifices were present in both eyes, with normal expression of fluid when expressed. There were 23 and 25 Meibomian orifices opening in the upper lids respectively, the meiboscore in both upper lids were 0 and in both lower lids were 3, the tear film breakup time was 2 seconds in both eyes, the Schirmer's test I was 5mm and 7mm, the Schirmer's test II was 3 and 6 mm in the right and left eye respectively. The conjunctiva was normal, the cornea in the right eye had punctate epithelial erosions in the inferior 1/3rd of the cornea, and the left cornea was not stained. Other than these findings the anterior and posterior segment were essentially normal. Anterior segment OCT pictures of the everted lids showed the Meibomian gland superiorly and these were absent inferiorly. She has been placed on Gutt Sodium Hyaluronate 0.2%, 3 hourly, and OcHypromellose Opthalmic Gel 0.3% enriched with Carbomer 980 USP 0.25% at night. She says her symptoms resolved while on these medications.

Although the congenital absence of the Meibomian gland is rare, they can present late with dry eye symptoms and mimic allergic conjunctivitis symptoms. We should examine the Meibomian orifices of all our patients to identify those with these abnormalities early. The report also highlights the importance of anterior segment OCT in evaluating the Meibomian gland.

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Quick Response Code:

Introduction

The Meibomian gland is responsible for secreting the lipid layer of the tear film to make it stable by reducing tear evaporation, preventing tear spillover from the margin, sealing the lid margin during sleep, and preventing tear film contamination by sebum. It is frequently found to be diseased in patients who present with severe chronic conjunctiva and corneal changes [1].

Evaporative dry eyes result from the reduction in the thickness or quality of the lipid layer and obstruction is the commonest cause [2]. The absence of the Meibomian gland is rare but has been shown to be associated with ectrodactyly ectodermal dysplasia, cleft lip-palate (ectrodactyly ectodermal dysplasia clefting syndrome), and with hypohidrotic ectodermal dysplasia [3].

When absent or deficient, it reflects in absent orifices. We present a case of a 45year old woman with recurrent ocular irritating symptoms and absence of lower lid Meibomian glands.

We are reporting this case because of the rare presentation as we did not come across any reported case in Nigeria or Africa, also to share the findings and experience in the management of this case. Ethical approval was gotten from the institution's ethical review board and informed consent from the patient.

Case Presentation

A 45year old Lady, a known patient of our clinic whom we have been managing for allergic conjunctivitis for the past 5 years, started complaining of her eyes feeling dry and foreign body sensation 2 years ago, there was no associated watering, pain, or redness. The ocular surface disease index was 12.5, which is a mild dry eye disease. Her dry eye symptom score was 7 out of 14.

On examination, she had no dysmorphic features, her unaided visual acuity was 6/5 in both eyes, and intraocular pressures of 12mmhg bilaterally. She had no Meibomian orifices on her lower lid margin, but the upper lid orifices were present in both eyes (Figures 1 and 2), with an expression of clear fluid from all orifices when compressed. There were 23 and 25 Meibomian orifices opening in the upper lids respectively, the meiboscore in both upper lids were 0, and in both lower lids were 3, and the meiboscore for the right and left eye is 3. The OCT meibograde was 0 in the upper lid as there was no shortening, dropout, or distortion noted in the upper lids but there was the absence of Meibomian glands inferiorly. There was no sign of lid margin irregularity, pouting or plugging of the orifices, vascular engorgement or changes in the mucocutaneous junction, eyelid thickening, dimpling, notching, pitting, tenderness, ridge formation between Meibomian glands, or distichiasis. Clear fluid was expressed from all the Meibomian gland openings on both upper lids. There was no capping or plugging on the Meibomian orifice.

The lower tear film meniscus height was noted to be greatly reduced, 0.15 mm in both eyes which is less than the expected normal which is 0.2 – 0.5 mm in height [4]. The tear film breakup time was 2 seconds in both eyes which was remarkably reduced as compared to the expected normal. (TFBUT: 15 to 45 seconds normal, 10 to 15 seconds borderline, 10 seconds abnormal) [4] The Schirmer's test I was 5mm and 7mm, and the Schirmer's test II was 3 and 6 mm in the right and left eye respectively, which was greatly reduced compared to the normal range which is 15 mm are normal, 5 to 10 mm are borderline, and <5 mm are abnormal[4]. The Fluorescein clearance test was normal as the fluorescein dye had cleared after 15mins.

The conjunctiva was normal and there was no conjunctival staining with fluorescein, the cornea in the right eye had punctate epithelial erosions in the inferior 1/3rd of the cornea, and the left cornea was not staining. Other than these findings the anterior and posterior segments were essentially normal. Anterior segment OCT pictures of the everted lids showed the Meibomian gland superiorly and these were absent inferiorly (Figures 3 and 4).

She has been placed on 0.2% sodium hyaluronate (Evolve HA 0.2%) (Medicom Healthcare Ltd., 7-12, WC1H 9LT, UK) 3 hourly and Oc 0.3% Hypromellose Ophthalmic Gel Enriched with Carbomer 980 USP

0.25%(Hyomer gel) (Arisopharma Ltd Plot # 14-22, Road # 11 &12 Shampur- Kadamtali I/A Dhaka- 1204, Bangladesh) at night. She says her symptoms have resolved while on these medications.

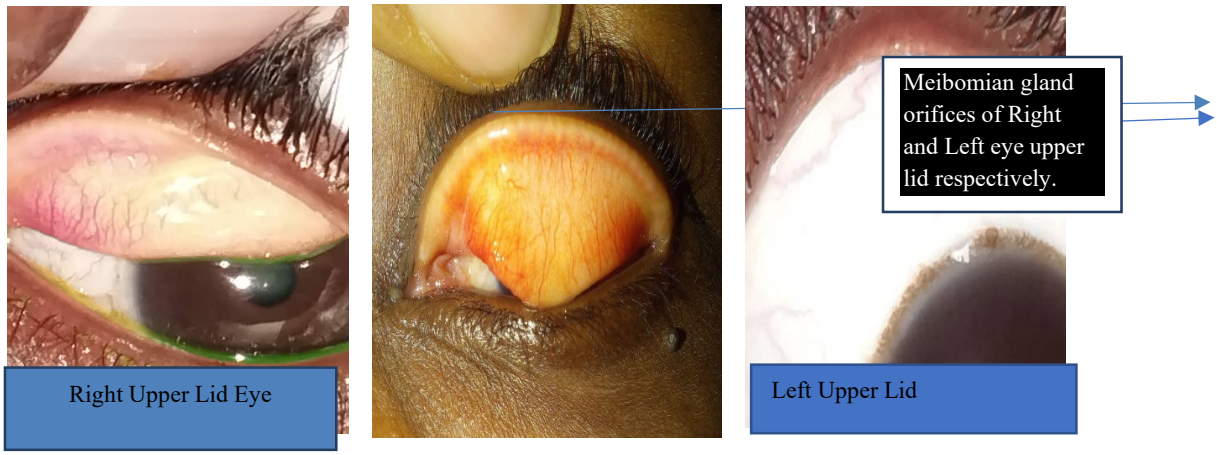

Figure 1: Upper Lid of the Right and Left Eye Showing the Meibomian gland Orifice.

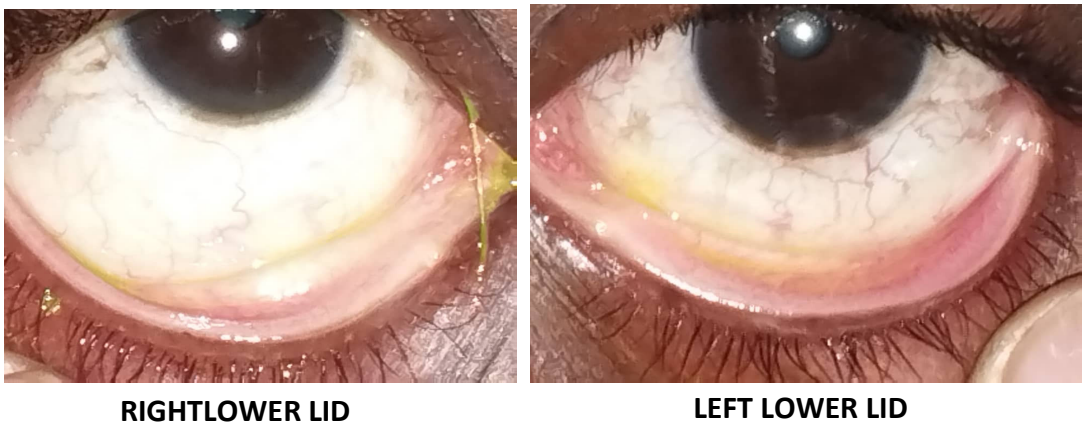

Figure 2: Lower lid of the right and left Eye showing absence of Meibomian gland orifice

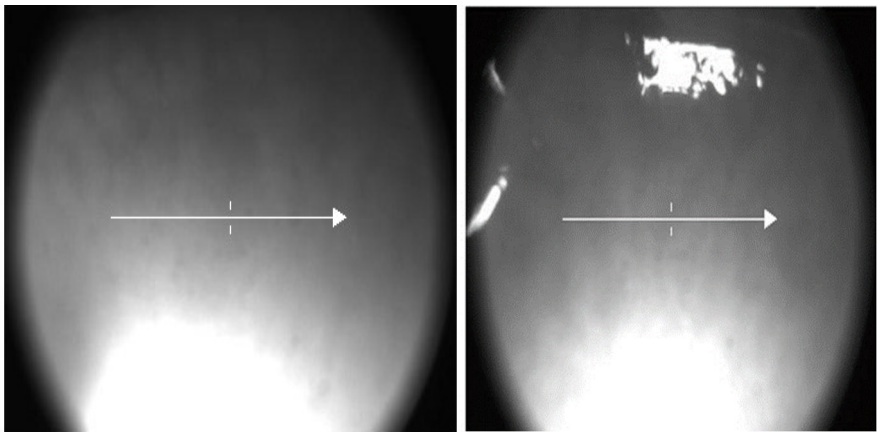

Figure 3: OCT Anterior Segment Meibography of the right and left upper lid respectively showing normal Meibomian gland structure.

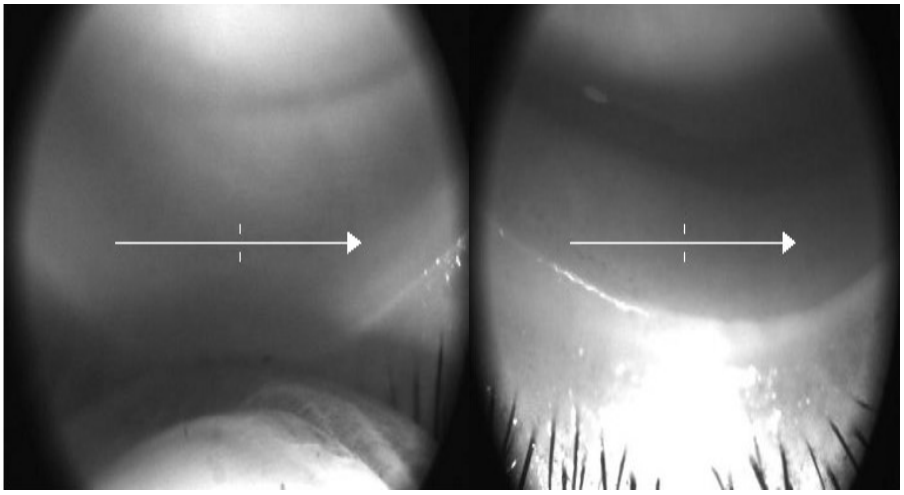

Figure 4: OCT Anterior Segment Meibography of the right and left lower lid respectively showing absence of the Meibomiangland.

Discussion

Meibomian gland disease is a common ocular disorder of which Meibomian gland dysfunction is a common subset while the congenital absence of the Meibomian gland is rarely seen [4]. There have been few reports of congenital absence of the Meibomian gland, it's been reported to be associated with ectrodactyly ectodermal dysplasia, cleft lip-palate, and hypohidrosis ectodermal dysplasia [3,5]. There have been few cases seen in normal humans without these associations. In 1987, Bron and Mengher reported a congenital absence of Meibomian gland seen in a 16-year-old who could not tolerate contact lenses. She was found to have 14 obliquely disposed Meibomian orifices in the right upper lid, which were about a quarter of the normal length and were absent in the central part of the lid and her left upper lid had 16 orifices of which the glands were elongated and lying oblique and both lower lids had a single Meibomian gland and orifice [6]. They also reported on a female who had evaporative dry eye symptoms from infancy, with absence of the Meibomian gland, although many details on her ocular examination were not stated [6]. Rahimi and Abdi in 2016 reported a 36-year-old male and his 11-year-old son who had a complete absence of Meibomian glands and diffuse punctate epithelial erosions on the cornea [7].

We report on a 45-year-old lady who started having evaporative dry eye symptoms, 2 years ago. Although she had been our patient 3 years prior to this complaint, we did not take notice of the absence of the Meibomian gland until she complained of dryness. The late presentation could possibly be because this was not a complete absence and the upper lid compensated prior to this time. The onset of symptoms of congenital absence of the Meibomian glands depends on the number of glands present. The case reported by Rahimi and Abdi presented early in childhood because of the complete absence of the Meibomian gland [7] as compared to the 16-year-old lady who could not tolerate contact lenses, her symptoms started at 16 because of the contact lens otherwise she had no symptoms prior [6]. Bron and Mengher also explained that non-wetting problems resulting from aqueous deficiency of congenital origin do not necessarily occur in infancy but may become symptomatic in their teens or twenties, suggesting that the ocular surface may be more resilient in the young [6].

She had the classical presentation of evaporative dry eye as the Meibomian gland secretes the oily/lipid layer that coats the aqueous layer and retards evaporation of the tears, hence when these are reduced symptoms of dryness and irritation ensue [1]. Mishima and Maurice reported that meibomian oil reduces evaporation by 4-20-fold [8]. Due to the deficiency in the lipid layer, she also had significantly reduced tear film meniscus and tear film breakup time. Her Schirmer's test was abnormal in both eyes, although more marked in the right eye and that's probably why the punctuate epithelial erosions were found in the right eye. She also had a reduced number of Meibomian glands in the upper lid as compared to the expected normal which is said to

be 30-40 in the upper lid [9]. She was also noticed to have one row of Meibomian gland as some occasionally have a double row.

OCT anterior segment meibiography was very essential in evaluating the morphology of her Meibomian gland as there was no shortening, dropout, or distortion noted in the upper lids but there was the absence of Meibomian glands inferiorly. Her OSDI was found to be 12.5, making her feature a mild dry eye disease.

We placed her on tear substitute, especially an oil-based tear substitute, Oc 0.3% Hypromellose Ophthalmic Gel Enriched with Carbomer which would be helpful to reduce evaporation of the tears and she no longer has the symptoms while she is on these medications.

She was also advised on regular lubrication and blinking, to wear sunglasses to protect her eyes from wind or sunlight, to ensure her surroundings are humidified, to maintain good hydration, to avoid smoking, and avoid the use of cosmetic contact lenses as there is a risk of intolerance and corneal infection [4]. If the mild dry eye disease she has is overlooked or not managed appropriately there is a risk of her developing Severe dry eyes as she advances with age which can lead to might lead to blurred vision, inability to wear contact lenses, headaches, corneal keratinization, scarring, or corneal ulcers [4].

Conclusion

Congenital absence of the Meibomian gland is rare and can be easily missed. They can present late with dry eye symptoms. We should examine the Meibomian orifices of all our patients, especially those presenting with dry eyes and allergic symptoms in order to identify those with the condition early. The report also highlights the importance of anterior segment OCT in evaluating the Meibomian gland.

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