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Contents

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Eye Flu Epidemic: Modes of Presentation and Deciding its Management

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Abstract

Methodology: A total of 100 patients presenting with conjunctivitis were thoroughly examined and patients with viral conjunctivitis were included in the study. Study data included visual acuity, slit lamp examination and follow up after 5 days. Patients were given conservative treatment like cold compression, lubricating eye drops, anti-histamines, Moxifloxacin Low potency steroid combination eye drops, Moxifloxacin eye drops, Tobramycin eye drops and Chloramphenicol eye ointment according to the severity of the conjunctivitis and corneal involvement, for 3-7 days according to the underlying etiology and severity of the disease.

Results: In cases with, mild conjunctivitis cold compression, topical lubricants and topical anti histamines and topical antibiotics eye drops were advised, which showed symptomatic relief. In patients with severe inflammation, Moxifloxacin and low potency steroid combination eye drops showed better results. Topical Steroids were avoided in 3% of the study population who developed superficial punctate keratitis.

Conclusion: It's a self-limiting disease. There is need to educate people about personal hygiene and adverse effects of sharing of eye drops and self-medication.

Keywords: Viral conjunctivitis; Moxifloxacin; Lubricant eye drops.

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INTRODUCTION

Red eye is one of the most common ophthalmologic conditions in the primary care setting. Inflammation of almost any part of the eye, including the lacrimal glands and eyelids, or faulty tear film can lead to red eye.

Conjunctivitis is the most common cause of

red eye. Red eye is the cardinal sign of ocular inflammation. The condition is usually benign and can be managed by primary care physicians. Infectious conjunctivitis can result from bacteria, viruses, fungi, and parasites. However, 80% of acute cases of conjunctivitis are viral, the most common pathogen being adenovirus. Adenoviruses are responsible for 65 to 90% of cases of viral conjunctivitis.[1] Other common viral pathogens are herpes simplex, herpes zoster, and enterovirus.

The prevalence of conjunctivitis varies according to the underlying cause, which may be influenced by the patient's age, as well as the season of the year. Viral conjunctivitis is the most common cause of infectious conjunctivitis both overall and in the adult population and is more prevalent in summer.[2] Bacterial conjunctivitis is the second most common cause and is responsible for the majority (50%-75%) of cases in children; it is observed more frequently from December through April.[3,4]

Bacterial conjunctivitis is highly contagious and is most commonly spread through direct contact with contaminated fingers. Based on duration and severity of signs and symptoms, bacterial conjunctivitis is categorized as hyperacute, acute, or chronic.

Viral conjunctivitis caused by the adenovirus is highly contagious, whereas conjunctivitis caused by other viruses [e.g., herpes simplex virus (HSV)] are less likely to spread. Viral conjunctivitis usually spreads through direct contact with contaminated fingers, medical instruments, swimming pool water, or personal items. It is often associated with an upper respiratory infection spread through coughing.

Generally, viral and bacterial conjunctivitis are self-limiting conditions, and serious complications are rare. Because there is no specific diagnostic test to differentiate viral from bacterial conjunctivitis, most cases are treated using broad spectrum antibiotics. Allergies or irritants also may cause conjunctivitis.[5]

Also, discrimination between viral and bacterial origins of infectious conjunctivitis based on historical, non-specific, clinical signs and symptoms contribute to a high rate of misdiagnosis and overuse of antibiotic treatment.

Through a detailed patient history and careful eye examination the cause of the red eye can be diagnosed, which helps in finding a better treatment for the respective underlying etiology. Hence, this study was conducted to compare how and with what different symptoms the patients are presenting to the out-patient department and how they are responding to the treatment.

OBJECTIVES

To study the various modes of presentations of Viral Conjunctivitis and the efficacy of the treatment.

METHODOLOGY

A descriptive and comparative study active outpatient study was conducted on 100 patients which included both children and adults. All age groups male and female patients attending ophthalmology OPD at tertiary eye care Centre, who were clinically diagnosed as bacterial/ viral conjunctivitis were included in the study. Patients with other forms of conjunctivitis were excluded from the study. The study was conducted after Institutional Ethical Committee approval. Informed consent was obtained from all patients, in regional language in the prescribed format and explained about the study purpose and procedures prior to their enrollment in study. All the patients presenting with conjunctivitis were thoroughly examined and patients with viral conjunctivitis were included in the study. Study data included visual acuity, slit lamp examination, follow up after 5 days.

Patient's history was noted after checking the Visual acuity during the active stage. Eye Drops were prescribed according to the signs and symptoms observed. Slit lamp examination and visual acuity were done again after 5 days of treatment. Visual acuity was checked for all the adult patients using the Snellen's Chart for far vision.

Patients were given study drug Moxifloxacin Eye drops, Chloramphenicol Eye Ointment, Tobramycin Eye Drops, Moxifloxacin low potency steroids eye drops according to the severity of the conjunctivitis and corneal involvement, Lubricating eye drops and Olopatadine eye drops two/four times a day for a duration of 3-7 days according to the underlying etiology and severity of the disease.

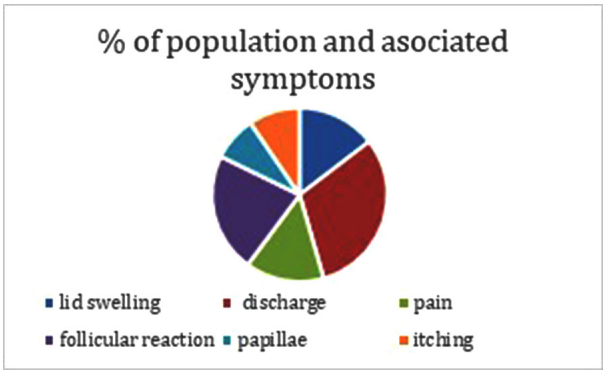
RESULTS

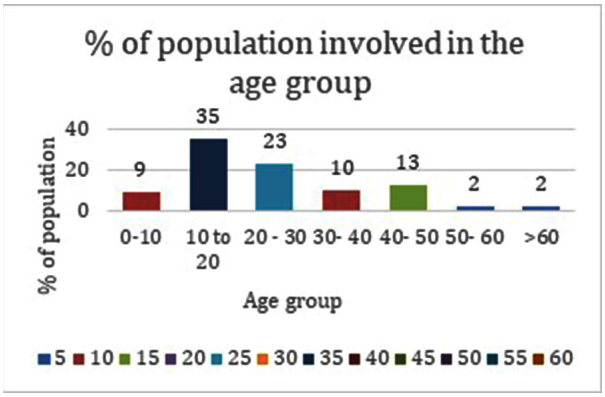
A total of 100 patients were enrolled in the study. The mean age of the patients was 25.47±14.74 years, and 59% of the patients were females 41% were male. The youngest was 23 day old baby and the

eldest was 72 years aged. The age group of 10-30 was the most affected which included 58% of the study population. The average longest and shortest course of the disease were 1 day and 15 days respectively.

Clinical Manifestations

All 100 patients presented with complaints of redness and watering. 50% of the patients presented with mucoid discharge 23% of the patients had lid swelling and pain. 13% of the patients complained of itching and foreign body sensation. 13% people presented with associated preauricular lymph node enlargement. 35% patients were identified to have follicular reaction. 13% patients were having papillae on slit lamp examination, 7% patients presented with late responded to faulty treatment from elsewhere, no patients complained of drop in visual acuity and no patients were seen with pseudo membrane formation.





Risk factors for Infection

Logistic regression analysis showed that epidemic viral conjunctivitis occurrence within family; contact with a patient's eyes or hands or articles used by a patient; and sharing eye drops, bedding and pillows were risk factors for infection.

Incubation period was 1-3 days in all age group patients. 87% patients had contact history and 13% patients had no known history of contact.

DISCUSSION

Epidemic viral conjunctivitis is an ocular surface infection associated with a marked inflammatory reaction, and symptoms of redness, watering, itching and sensitivity to light frequent eye rubbing. Clinical signs include conjunctival congestion, petechial hemorrhages, follicular conjunctivitis.

Generally, it's a self-limiting disease but with the use of topical and systemic medications helps patients in finding relief from the symptomatic. Presence of follicles under the eyelids and petechial hemorrhages were observed for the case of viral conjunctivitis along with systemic symptoms like sore throat, upper respiratory tract infection, fever preauricular lymph node enlargement. Few patients showed the presence of papillae on everting the eyelids, lid swelling, pain with mucopurulent thick discharge which was suggestive of bacterial conjunctivitis. Those who had viral conjunctivitis showed an incubation period of 1 to 3 days and their recovery period varied somewhere between 5 to 7 days. 82% of the patients presented with the involvement of both eyes.

35% of patient's follicular involvement and 23% of patients with papillae, 22% patients presented with itching of eyes, in such cases according to AIOS guidelines cold compression, topical lubricants and topical anti histamines eye drops were advised which showed symptomatic relief in the patients.

27% patients presented with mucoid discharge and sticking of the eyelashes which was more evident in the early mornings. 68% patients complained of watery discharge.

10% patients presented with conjunctival chemosis, these patients got relief with the usage of topical lubricants and oral anti-inflammatory medications.

According to Asena, L., Singar ozdemir, E., burcu, A. *et al* symptoms were observed to be less severe and had a shorter duration in patients receiving topical corticosteroids when compared to palliative treatment. Our study observed that low potent steroids with antibiotic were helpful in reducing the load of the disease.

Moxifloxacin in combination with Low potency steroidseye drops showed better results in 27% of patients who had severe inflammation.

In 3% of the study population who developed superficial punctate keratitis topical steroids were avoided.

Around 6% patients presented with very late with non-responsiveness who were treated elsewhere with secondary bacterial involvement were treated with Moxifloxacin eye drops and Chloramphenicol eye ointment and showed symptomatic relief in 2-3 days after the commencement of the treatment.

Bacterial conjunctivitis was observed to get cured by the regular usage of antibiotic eye drops and lubricating eye drops. Those having bacterial conjunctivitis showed a recovery period of nearly 3 to 4 days. Patients followed up on day 5 showed complete regression.

Lid hygiene and surrounding personal hygiene played an important role in the spread of the disease and this was explained to all the patients presenting to the outpatient department to curb the spread of the disease. Disinfection of the slit lamp after examining the patients was maintained to decrease the spread of the disease from outpatient department side. Sanitization of the hands with alcohol-based solution or washing the hands with soap and water or changing gloves was practiced by the physicians to maintain disinfection.

CONCLUSION

Acute viral conjunctivitis is a self-limiting condition and usage of antibiotic eye drops, lubricant eye drops and low potency steroid eye drops after identifying the underlying etiology can help in better and faster cure. Further, maintaining hygiene and taking prophylactic treatment for the non-affected eye also limits its spread. Eye flu epidemic can be better controlled by educating the people about the modes of the spread of infection and the importance of maintaining hygieneby frequent washing of hands, and avoiding sharing of drops among family members and self-medication.

REFERENCES

1. Azari AA, Barney NP. Conjunctivitis: a systematic review of diagnosis and treatment. JAMA. 2013 Oct 23;310(16):1721-9.
2. Hovding G. Acute bacterial conjunctivitis. Acta Ophthalmol. 2008;86(1):5–17.
3. Woodland RM, Darougar S, Thaker U, *et al*. Causes of conjunctivitis and keratoconjunctivitis in Karachi, Pakistan. Trans R Soc Trop Med Hyg. 1992; 86(3):317–320.
4. Fitch CP, Rapoza PA, Owens S, *et al*. Epidemiology and diagnosis of acute conjunctivitis at an inner-city hospital. Ophthalmology. 1989;96(8):1215–1220.
5. Holly Cronau, Ramana Reddy Kankanala, And Thomas Mauger. Diagnosis and Management of Red Eye in Primary Care. Am Fam Physician. 2010;81(2):137-144.

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A Prospective Study to Evaluate Filtering Blebs after Trabeculectomy using Anterior Segment OCT

Poonam A. Jiragyal[1], Rashmi Bhat[2]

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Abstract

Purpose: To evaluate the morphology of filtering blebs following trabeculectomy with mitomycin C using Anterior Segment Optical Coherence Tomography (AS-OCT) at 1 month after surgery and at 6 months follow up for bleb function.

Materials and Methods: A prospective observational study was designed to include 30 eyes (25 patients) who underwent trabeculectomy with mitomycin-C (MMC) in Mcgann District Teaching Hospital, Shimoga over a period of 1 year. Post-operatively morphology of bleb was examined at 1 month and 6 months using Anterior Segment Optical Coherence Tomography. Bleb wall was assessed for thickness of the bleb wall along with its morphology, hyper- or hypo-reflectivity and whether micro-cysts were present or not. Bleb function was considered to be successful when target pressure for each of the patient was attained post-operatively (for mild glaucoma, target pressure is kept as 15-17 mm Hg, for moderate glaucoma 12-15 mmHg and in severe glaucoma 10-12 mmHg) without any medications.

Results: Bleb function was successful in 21 (70%) eyes with mean IOP of 10-15 mmHg. Morphology of bleb on AS-OCT at one month showed uniform bleb wall reflectivity in 8 eyes (26.66%) and multiform wall reflectivity in 22 eyes (73.33%). In eyes showing multiform wall reflectivity, bleb morphology pattern of microcysts with multiple layers was seen in 10 eyes (45.45%), microcysts with subconjunctival separation in 8 eyes (36.36%) and only microcyst pattern in 4 eyes (18.18%).

When the bleb features at one month were compared with the bleb function at six months, according to the statistical analysis, blebs with the morphology of multiform wall reflectivity with many microcysts were associated with higher chances of success.

Conclusions: AS-OCT can be a predictor to assess long term functioning of filtering blebs. The filtering bleb morphology with multiform reflectivity and multiple cavities with microcysts was associated with a good functioning bleb at late post-operative period.

Keywords: Trabeculectomy; AS-OCT; Filtering Blebs; Glaucoma; Grading system.

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INTRODUCTION

Glaucoma accounts for 12.8% of preventable blindness in the country. It is the third most common cause of blindness in India.

Glaucoma is commonly diagnosed and treated by all ophthalmologists and not just the glaucoma specialists. Currently, decreasing the Intraocular pressure (which is a modifiable risk factor) is the only therapy available to treat glaucoma.[1]

Maintaining Target iop is important for reduction in progression of glaucoma. This is based on severity of glaucomatous damage in an individual patient and other known risk factors.[1]

Target IOP may not be achieved in many patients even with maximum tolerated medical therapy. In such cases, Trabeculectomy is the procedure of choice in significantly reducing IOP in patients of long term Primary Open Angle Glaucoma (POAG) and Primary Angle Closure Glaucoma (PACG).[1]

The outcome of trabeculectomy mainly depends on the morphology and formation of a functioning filtration bleb.[2]

Bleb morphology is an important clinical parameter to indicate the bleb function and any bleb related complications that may occur.[2] Bleb appearance is graded with the help of parameters like vascularity, bleb height, width, encystment according to the reference photographs (namely, Indiana Bleb appearance Grading Scale-IBAGS, Modified Moorfields Bleb Grading System-MBGS)[2]

The IBAGS, however, does not describe vascularity of the bleb away from the central area, and cannot describe mixed morphology blebs. Bleb morphology was characterised by using 4 parameters: thickness of bleb wall, height of the bleb, the proportion of the total bleb area that was diffusely elevated (as opposed to demarcated), and the total width of the bleb. This was designed by Wells *et al*.[6]

Anterior Segment Optical Coherence Tomography (AS-OCT) is a non-contact, rapid imaging device which uses low coherence interferometry to form cross-sectional images of anterior segment of the eye.[3]

AS-OCT is useful in showing cross-sectional images of bleb wall morphology that were previously seen from clinical examination. In general, AS-OCT can be used to appreciate qualitative characteristics such as structure of bleb, scleral flap location, patency of internal ostium, presence or absence of cystic spaces and also semi-quantitative characteristics like total bleb height, size of bleb cavity, thickness of bleb wall and scleral flap thickness.[4]

This information is important to detect signs of bleb failure, which can further be managed appropriately.

In this study, the morphological bleb features after trabeculectomy with MMC on AS-OCT will be evaluated to characterise the functioning of the filtering bleb post-operatively.

Aims & Objectives

1. To evaluate the morphology of blebs following trabeculectomy using AS-OCT at 1 month post-operatively.
2. To study the relation between bleb morphology using AS-OCT and the bleb functioning at 6 months post-operatively.

MATERIALS AND METHODS

A prospective observational study is designed to include 30 eyes (25 patients) undergoing trabeculectomy with mitomycin-C (MMC) in Mcgann District Teaching Hospital, Shimoga over a period of 1 year (May 2022-May 2023).

Our study included all patients with primary glaucoma (open angle or angle closure) which was refractory to the maximum medical treatment tolerated by the patient. Baseline IOP was considered as an average of minimum two measurements taken two weeks apart and measurement was done at different times of the day.

Exclusion criteria included patients with previous ocular surgery, secondary glaucoma and congenital glaucoma which were not included in the study.

This study is done with respect to the tenets of the declaration of Helsinki, and is approved by the Institutional Ethical Committee. Informed consent in the written format was obtained from all the patients before start of the study.

A single surgeon performed all surgeries using a standardized surgical technique. After the creation of fornix based conjunctival flap, sponge soaked Mitomycin C (MMC) in 0.02% concentration was applied under the conjunctiva for a duration of 2 minutes making sure that the soaked sponge doesn't come in contact with cut ends of conjunctival flap. A Triangular scleral flap

with partial scleral thickness was created followed by formation of a sclerostomy of 2×2mm using Kelly's punch. Closure of triangular scleral flap was doneusing 1 apical suture and 2 releasable sutures using 10-0 Nylon. Conjunctiva was then closed with 10-0 Nylon sutures.[11]

Post-operatively antibiotic and steroid drops were given in tapering dose overone and half months. The patients were the examined at one day, one week, one month and six months after the procedure.

IOP was measured using Goldmann-applanation tonometer at each visit. The patients were called at different times of the day in each follow-up day for detection of significant diurnal IOP fluctuations.[2]

All of the filtering blebs were examined under set magnification and illumination under slit lamp and graded according to Wuerzburg classification.[7]

This was followed by examination under AS-OCT for the morphology of filtering bleb.

Annexure 1: Wuerzburg classification

Parameters	Grading
Vascularity	3 – avascular
	2 – similar to adjacent conjunctiva
	1 – increased
	0 – massive
Corkscrew vessels	3 – none
	2 – in one third
	1 – in two thirds
	0 – entire bleb
Microcysts	3 – entire bleb
	2 – lateral or medial end of the flap
	1 – over scleral flap
	0 – none
Encapsulation	3 – none
	2 – in one third
	1 – in two-thirds
	0 – entire bleb

Successful blebs showed hyporeflective blebs suggesting of fluid filled cavity with microcysts. Failed blebs showed occlusion of ostium, or attachment of conjunctivo-episcleral to scleral flap to its bed along with absence of bleb wall thickening. These features are difficult to see with the slitlamp alone.[10]

Bleb walls with hyper reflectivity associated with fluid filled cavities, plenty of microcysts with patent internal ostia are associated with good filtration of aqueous humour.

Bleb function was labelled as successful only if target pressure for each patient was attained post operatively (for mild glaucoma, target pressure is kept as 15-17 mm Hg, for moderate glaucoma 12-15 mmHg and in severe glaucoma 10-12 mmHg)[1]

Statistical Analysis

In this study, the data collected was expressed on MS excel sheet and SPSS version 21 was used for data analysis with use of proportions, chi square test as required.

RESULTS

Out of 30 eyes which were included, 25 eyes had primary open angle glaucoma (83.33%), and 5 eyes had primary angle closure glaucoma (16.66%). Mean age was 60 years. This study included 20 males and 10 females.

Bleb function was successful in 21 (70%) eyes with mean IOP of 10-15 mmHg and failed bleb was seen in 9 (30%) eyes with mean IOP of 22 mmHg.

Bleb morphology features are depicted in Table 1 and 2.

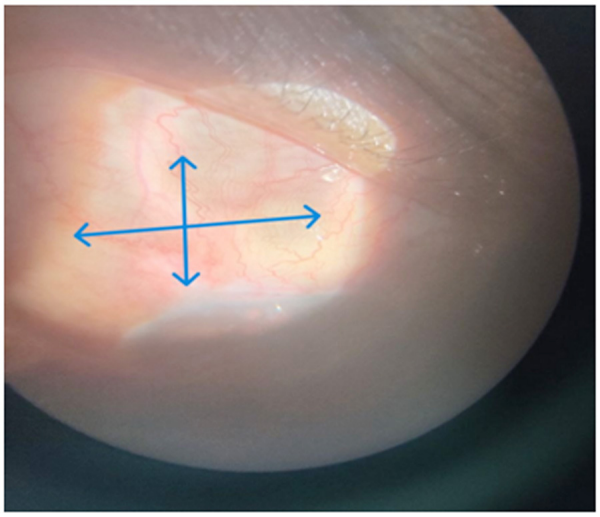

Fig. 1: Vertical and horizontal dimensions of the bleb measured in AS-OCT

Table 1: Bleb pattern at 1 month

Bleb wall morphology at 1 month	Number of eyes
Uniform bleb wall reflectivity	8 (26.66%)
Multiform wall reflectivity	22 (73.33%)

Bleb structure on AS-OCT at follow up at one month showed uniform bleb wall reflectivity in 8 eyes (26.66%) and multiform wall reflectivity in 22 eyes (73.33%).

At one month, in eyes which had multiform wall reflectivity, bleb morphology pattern of microcysts in multiple layers was shown in 10 eyes (45.45%), microcysts along with subconjunctival separation was shown in 8 eyes (36.36%) and only microcyst morphology in 4 eyes (18.18%).

When the bleb features at one month were compared with the bleb function at six months, it was found that, in the bleb wall with uniform reflectivity, only 5 out of 8 eyes (62.5%) had successful bleb function at six months and with multiform wall reflectivity, 18 out of 22 eyes (81.81%) had successful bleb function at six months (P= 0.50).

Table 2: At 1 month

Patterns in multiform wall reflectivity	Number of eyes
Multiform wall reflectivity with microcysts with multiple layers	10 (45.45%)
Microcysts with subconjunctival separation	8 (36.36%)
Only microcyst pattern	4 (18.18%)

Amongst blebs with multiform wall reflectivity, bleb pattern of microcysts with multiple layers were seen in 10 eyes. Of these, 8 eyes (80%) showed successful bleb function at post-operative period of six months.

All 8 eyes with bleb pattern of microcysts with subconjunctival separation had successful bleb function at six months (100%). Of the 4 eyes with bleb pattern of only microcysts, 3 eyes (75%) had successful bleb function at six months.

Table 3: Features of the morphology of filtering bleb on AS-OCT at 6 months after surgery

Bleb Morphology	Success (%)	Failure (%)	Total (%)
Uniform bleb	5 (62.5)	3 (37.5)	8(26.66)
Multiform wall reflectivity bleb pattern of microcysts with multiple layers	8 (80)	2 (20)	10 (45.45)
Bleb pattern of microcysts with subconjunctival separation	8 (100)	0 (0)	8 (36.36)
Bleb pattern of only microcysts	3 (75)	1 (25)	4 (18.18)

So, after six months the results showed that, Bleb walls with multiform reflectivity morphology suggested increase in success of functioning of filtering blebs at six months (P < 0.001).

Bleb walls with the morphology of multiple internal layers with microcysts also suggested increased chances of success of functioning filtering bleb at six months (P < 0.001). Hence, the bleb pattern at one month on AS-OCT is a significant predictor of surgical success at six months.

Table 4: Comparison of features of filtering bleb at 1 month and 6 months

Filtering Bleb Features on AS-OCT	At 1 Month	At 6 Months
Uniform bleb	8 eyes	5 eyes
Multiform wall reflectivity bleb pattern of microcysts with multiple layers	10 eyes	8 eyes
Bleb pattern of microcysts with subconjunctival separation	8 eyes	8 eyes
Bleb pattern of only microcysts	4 eyes	3 eyes

The logistic model achieved a high predictive accuracy of 86% and Nagelkerke

R-square was 50.4% signifies that the model has a sound explanatory power achieving P value of 0.001.

Table 5: Features of functioning vs non-functioning bleb on AS-OCT

Features of functioning bleb on AS-OCT	Features of non-functioning bleb on AS-OCT
Multiform reflectivity of bleb wall along with fluid filled multiple cavities that are seen as hypo-reflective areas suggestive of pockets of aqueous humour	Bleb walls with uniform reflectivity and flat spaces suggestive of less filtration of aqueous humour

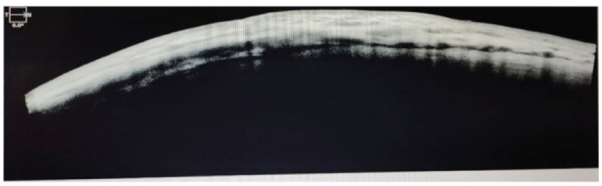

Fig. 2: AS-OCT with multiform reflectivity with microcysts

DISCUSSION

Bleb morphology is an important predictor for bleb function and success of trabeculectomy surgery.

AS-OCT has shown great efficacy in estimation of the morphology of the filtering bleb post trabeculectomy surgery.

Khamar *et al*. classified bleb wall reflectivity into two types, multiform or uniform reflectivity. Multiform bleb wall reflectivity describes a morphology with small, multiple fluid filled spaces which form the hypo-reflective areas in the conjunctiva or bleb wall. It is said that hypo-reflectivity of the bleb wall and the microcysts are

suggestive of aqueous humour collection within the filtering bleb wall. Unlike bleb walls that form uniform reflectivity at 1 month led to poor bleb function at 6 months. AS OCT is a useful tool in the early post operative period to predict the functional morphology of blebs, and hence help in early identification and intervention of Bleb failure.[2]

Mastropasqua *et al* in their study mentioned that functioning blebs, after MMC-augmented trabeculectomy, formed either a diffuse or a cystic shape. Using AS-OCT (Visante OCT), these blebs showed a patent and low reflective inner cavity with multilobed cystic shape, and a thick and low reflective bleb wall.[5]

Savini *et al* graded these filtering blebs into type A, B and C on the basis of morphology on AS-OCT. Type A blebs suggested a single elevated space under a thick layer of scarred conjunctival tissue and the fluid filled space gets extended in the horizontal meridian as well. Type B blebs showed multiple, elevated, communicating cavities beneath a thin layer of conjunctiva. Irregular septa of connective tissue of low-to-medium reflectivity could be seen beneath the bleb wall. Type C blebs featured multiple, irregular hypo-reflective flat spaces mixed with the scarred conjunctival tissue over the filtration site.[9]

Hence, Type C filtering blebs were associated with trabeculectomy with mitomycin C and good post-operative IOP control.

Singh *et al* concluded that conjunctival episcleral thickening in the bleb wall was the hallmark of blebs in which IOP was successfully controlled. This thickening reflected the flow of aqueous through conjunctivo-episclera and was better demonstrated by AS-OCT than clinical examination or photography, especially in low elevation blebs, which may be wrongly labelled as flat.[4]

In our study, we concluded that hypo-reflective blebs with microcysts and multiple fluid filled cavities had good bleb function at 1 month post-operative and 6 months post-operative.

CONCLUSIONS

The study showed that multiform wall with hypo-reflectivity with multiple internal fluid filled cavities and microcysts had chances of functioning filtering bleb at six months following trabeculectomy. Along with also affirming that AS-OCT is an important and relatively less time consuming method to estimate the success rate of trabeculectomy with respect to filtering bleb features. As AS-OCT is an objective evaluation, there is less inter-observer variability.

A limitation of this study is that there is no correlation here with the slit lamp grading and the features on AS-OCT. Also, long term follow up is required to confirm the functioning of filtration bleb in post-trabeculectomy.

REFERENCES

1. Sihota R, Angmo D, Ramaswamy D, Dada T. Simplifying "target" intraocular pressure for different stages of primary open-angle glaucoma and primary angle-closure glaucoma. Indian J Ophthalmol. 2018 Apr;66(4):495-505.
2. Khamar MB, Soni SR, Mehta SV, Srivastava S, Vasavada VA. Morphology of functioning trabeculectomy blebs using anterior segment optical coherence tomography. Indian J Ophthalmol. 2014 Jun;62(6):711-4.
3. Maslin JS, Barkana Y, Dorairaj SK. Anterior segment imaging in glaucoma: An updated review. Indian J Ophthalmol. 2015 Aug;63(8):630-40.
4. Singh M, Chew PTK, Friedman DS, Nolan WP, See JL, Smith SD *et al*. Imaging of Trabeculectomy Blebs Using Anterior Segment Optical Coherence Tomography. Ophthalmology. 2007 Jan;114(1):47-53.
5. Mastropasqua R, Fasanella V, Agnifili L, Curcio C, Ciancaglini M, Mastropasqua L. Anterior segment optical coherence tomography imaging of conjunctival filtering blebs after glaucoma surgery. Biomed Res Int. 2014;2014:610623.
6. Wells AP, Crowston JG, Marks J, Kirwan JF, Smith G, Clarke JC, Shah R, Vieira J, Bunce C, Murdoch I, Khaw PT. A pilot study of a system for grading of drainage blebs after glaucoma surgery. J Glaucoma. 2004 Dec;13(6):454-60.
7. Cantor LB, Mantravadi A, WuDunn D, Swamynathan K, Cortes A. Morphologic classification of filtering blebs after glaucoma filtration surgery: the Indiana Bleb Appearance Grading Scale. J Glaucoma. 2003 Jun;12(3):266-71.
8. Sacu S, Rainer G, Findl O, Georgopoulos M, Vass C. Correlation between the early morphological appearance of filtering blebs and outcome of trabeculectomy with mitomycin C. J Glaucoma. 2003 Oct;12(5):430-5.
9. Savini G, Zanini M, Barboni P. Filtering blebs imaging by optical coherence tomography. Clin Exp Ophthalmol. 2005 Oct;33(5):483-9.

10. R. Sharma, A. Sharma, T. Arora *et al*., "Application of anterior segment optical coherence tomography in glaucoma," Survey of Ophthalmology, vol. 59, no. 3, pp. 311–327, 2014.
11. Sheilds Textbook of Glaucoma 7th edition, R. Rand Allingham.

Original Article

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Study of Ocular Manifestations in ICU Patients

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Abstract

Purpose: To study the various ocular manifestations in ICU patients.

Methodology: A prospective study conducted in a total of 100 patients who admitted between June & September (2023) to the ICU. Ocular findings were documented in a Diabetes mellitus, & Hypertension, Anaemia, Cerebral vascular accident, Alcohol withdrawal, Chronic kidney disease, poisoning & Respiratory diseases.

Results: 100 ICU patients were examined, on ocular examination 20% Subconjunctival haemorrhage, 10% exposure keratopathy, 80% dry eye, 5% corneal ulcer. Is mainly noted in long staying ICU patients.

Conclusion: Eye care is mandatory for the ICU patients & should have a better co-ordination between physician & ophthalmologist patient in ICU have impaired ocular protective mechanisms resulting in high risk of developing eye complications.

Keywords: ICU; Dry eye; Exposure keratopathy.

INTRODUCTION

Intensive care units (ICU) treat patients in life-threatening conditions who require the comprehensive care of an interdisciplinary team. During hospitalization, the medical staff mainly focuses on securing basic vital functions, controlling life-threatening disorders, and stabilizing the patient's condition. Ocular complications, are sometimes overlooked by medical professionals.[1,2] Failure to give importance to the eye of the long staying patients in ICU is the main cause of developing ocular diseases like Subconjunctival haemorrhage, exposure keratopathy, dry eye, & corneal ulcer. These complications may lead to irreversible pathological changes, blindness, disability, and deterioration in the quality of life of patients after ICU discharge.[3,4] Eye complications usually occur between the 2nd and 7th days of stay in the ICU.[5,6] These complications occur because of lack of awareness on current guidelines, reduced in blink reflex & impaired ocular protective mechanisms, failure to recognise the

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corneal problems till it reaches advanced stage. Manifestations of dry eye are tear film instability, tear hyperosmolarity, inflammation & ocular surface damage, and neurosensory abnormalities plays etiological roles. An ocular examination aids physicians and surgeons in the management of various systemic diseases.

Hence, this study is undertaken to study the various ocular manifestations in long staying ICU patients with an attempt to determine the ophthalmologists role in ICU.

OBJECTIVES

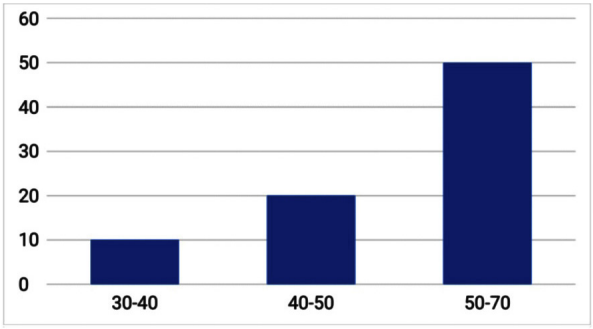
To study the various ocular manifestations in long staying ICU patients & importance of eye examination and care in all long staying ICU patients.

METHODOLOGY

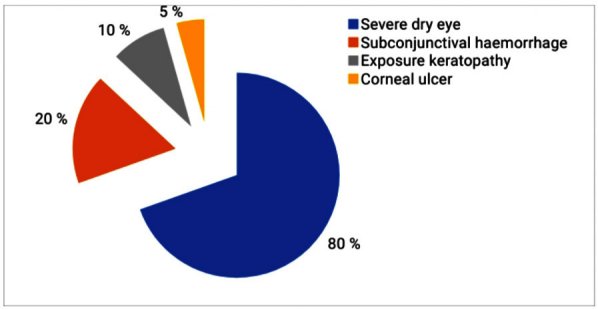
A prospective study was conducted on a total of 100 patients who were admitted between July & September (2023) to the ICU of Navodaya Medical College, Raichur. Ocular findings were documented for diabetes mellitus, hypertension, anaemia, cerebral vascular accident, alcohol withdrawal, chronic kidney disease, poisoning & Respiratory diseases. The study was conducted after obtaining ethical clearance certificate by the committee. Data was collected from the admitted ICU patients using a proforma. Informed consent was obtained prior collection of data. Study included all the admitted long staying ICU patients. Study excluded paediatrics patients, patients with facial injuries, head injury patients, nerve injuries and comatose patients. Anterior segment was examined for the signs of redness, corneal opacity, lids swelling, lagophthalmos, bells phenomenon, pupillary reflex conjunctival chemosis, corneal abrasions, dry eyes, corneal ulcers & perforation. Ocular Examination wasdone with help of torch light to look for anterior segment signs and pupillary reflexes. Schirmers test was performed on all the patients. Schirmers strip was inserted into the inferior fornix at the junction of lateral one third of lower eyelid margin for 5 min without topical anaesthesia and after 5 minutes the strip was carefully withdrawn and the length of wet strip was measured with a millimeter (mm) ruler to evaluate dry eye. Punctate keratopathy/corneal erosion was diagnosed when corneal epithelium was stained with fluorescein strips examined under cobalt blue filter with direct ophthalmoscope.

RESULTS

A total of 100 patients were examined during ICU hospitalization who were included in the study. The age of patients ranged between 31 and 70 years. The mean duration hospitalisation in the ICU in our study was 7± 3 days. Mean age of the patient was 55.51 year with majority being diabetics patients (70%). The mean schirmers test results was 3.6±1.3 mm.



Graph 1: Distribution of Age Group with Eye in Schirmer's Test



Graph 2: Distribution of Ocular Manifestations

The age group more than 50 years with diabetes mellitus were more commonly affected due to poor immunity. In our study we observed that smokers are the one with maximum dry eye.

On ocular examination 20% subconjunctival haemorrhage, 10% exposure keratopathy, 80% dry eyes & 5% corneal ulcer was mainly noted in long staying ICU patients.

DISCUSSION

Eye care is an important aspect of medical staff management in critically ill patients. However it has remained a neglected issue till a severe ocular problem is encountered.[7] Corneal dryness with subsequent erosions, infectious ulceration can occur in ICU patients whose ocular protective mechanism is compromised. Patients in ICU are

more prone to dry eye, exposure keratopathy, subconjunctival hemorrhage, corneal ulceration due to metabolic disturbances, mechanical ventilation & unconsciousness and insufficient lid closure. Opinion of the Ophthalmologist is mandatory in high risk long staying patients who is on ventilators, diabetes mellitus, pneumonia, hypertension, anemia and immunocompromised status. The study observed that on ocular examination almost 80% of ICU were presented with dry eye syndrome and followed by subconjunctival hemorrhage, exposure keratopathy and corneal ulceration. Our study did not observe any patient with corneal infections. In a prospective cross sectional study by Shaeri M *et al*, found the most common complications among the patients included dry eye and corneal abrasion (25.8%) followed by conjunctivitis (25%).[8] In a study conducted by Rajani Kadri *et al*, the most prevalent ocular disorders identified in ICU patients were exposure keratopathy (3.6%-60%), chemosis (9%-80%), followed by microbial keratitis.[9] In our study we observed that smokers are the one who is getting maximum dry eye, chemosis and subconjunctival haemorrhage are mostly seen in positive pressure ventilation and diabetic patients are more prone for keratitis. Patients are usually under mechanical ventilation in as much as several studies have shown the association between mechanical ventilation and ocular complications. These patients usually receive muscle relaxants and sedatives to tolerate the mechanical ventilation and have a low level of consciousness. Hence, their eyelids usually remain open and have no blinking too. This provides the conditions for superficial eye complications. The current study also proved that the longer the hospital stay in the ICU, the higher the risk of ocular complications. Importance of timely use of lubricants (artificial tears) & ointments, & topical antibiotics are needed along with meticulous care for eyelid closure. Training of medical staff who is working in ICU for identifying these signs & appropriate lid closure in ventilated patients as they are more prone to get keratitis.

The main limitations of this study are the prospective study and the small sample size. Another limitation of the study was short time of observation. We also did not evaluate the improved outcomes or quality of life with regular ophthalmology consultations, which also necessitates a further investigation. The findings could be used to design larger confirmatory study.

CONCLUSION

As ICU patients are more susceptible to develop dry eye, keratopathy, and ocular infections, they should be consulted by an ophthalmologist for early diagnosis of ocular surface disorders. Patients with diabetes mellitus were more commonly affected with dry eye syndrome. As the risk is high in immunocompromised & ICU patients regular screening should be done if the patients are staying more than 48 hours and better co-ordination should be there between ophthalmologist & physician so that we can prevent the disasters and save the eyesight.

REFERENCES

1. Selvan H, Pujari A, Sachan A, Gupta S, Sharma N. Neglected ocular surface care in critical care medicine: An observational study. Contact Lens Anterior Eye 2020, 43, 350–354.
2. Ramirez F, Ibarra S, Varon J, Tang R. The neglected eye: Ophthalmological issues in the intensive care unit. Crit Care Shock 2008, 11, 72–82.
3. Swanson M, McGwin G. Visual impairment and functional status from the 1995 National Health Interview Survey on Disability. Ophthalmic Epidemiol. 2004, 11, 227–239.
4. Christ SL, Zheng DD, Swenor BK, Lam BL, West SK, Tannenbaum SL, Muñoz BE, Lee DJ. Longitudinal relationships among visual acuity, daily functional status, and mortality: The Salisbury eye evaluation study. JAMA Ophthalmol. 2014, 132, 1400–1406.
5. Marshall AP, Elliott R, Rolls K, Schacht S, Boyle M. Eye care in the critically ill: Clinical practice guideline. Aust. Crit. Care 2008, 21, 97–109.
6. Ahmadinejad M, Karbasi E, Jahani Y, Ahmadipour M, Soltaninejad M, Karzari Z. Efficacy of Simple Eye Ointment, Polyethylene Cover, and Eyelid Taping in Prevention of Ocular Surface Disorders in Critically Ill Patients: A Randomized Clinical Trial. Crit. Care Res. Pract. 2020, 2020, 6267432.
7. Dawson D. Development of a new eye care guideline for critically ill patients. Intensive Crit Care Nurs. 2005 Apr; 21(2):119-22.
8. Shaeri M, Mahdian M, Akbari H, Azizzadeh Asl S. Incidence and related factors of surface eye disorders in traumatic intensive care unit patients in Iran. Int J Burns Trauma. 2021 Aug 15;11(4):344-349.
9. Rajani Kadri, Devika Parameshwar, Merin Susan Rajan, Sudhir Hegde, Ajay Kudva, Akansha Shetty. Ophthalmic profile of patients in an intensive care unit with protocolised care. Med Pulse International Journal of Ophthalmology. November 2017;4(2): 18-20.

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Case Report

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An Approach to a Case of Ankyloblepharon

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Abstract

Ankyloblepharon is a rare congenital abnormality consisting of partial or complete adhesion of the upper and lower eyelids by single or multiple bands. Ankyloblepharon is potentially amblyogenic condition. It is generally isolated but can present with systemic diseases. Its presence should alert the need for a detailed systemic evaluation. We present a 1 month old baby who presented to our institute with bilateral adhesions of the upper and lower eyelids, and then patient is evaluated systemically and then surgery was planned. The adhesion was excised with the use of Radio-Frequency cauteryundershort sedation. The separation of the lidsbefore the development of visual milestones is potentially important to prevent the onset of stimulus deprivation amblyopia.

Keywords: Ankyloblepharon; Congenital abnormality; Eyelid bands; Amblyopia.

INTRODUCTION

Ankyloblepharon is partial or complete adhesion of the eyelids by webs of skin. It may be present since birth (congenital) or may be acquired.[1] Ankyloblepharon may be complete, partial or interrupted. The interrupted form is also known as ankyloblepharon filiforme adnatum (AFA). It was first described by Von Hasner in 1881. It causes decrease in the palpebral fissure height and limited movement of eyelids. It is a benign, rare but potentially amblyopic congenital malformation.[2] During embryonic life the eyelids stay fused until the 5th month of fetal life. At this period, they start to separate, but it remain partially attached until the 7th month.[2] This abnormality happens when the eyelids fail to separate, either partial or complete, resulting in shortening of the palpebral fissure. These limit eyelid movement. Ankyloblepharon may present as an isolated finding, may be associated with other congenital anomalies like hydrocephalus, meningocele, an imperforate anus, bilateral syndactyly, infantile glaucoma and cardiac problems such as patent ductus arteriosus and ventricular septal defects or it may be a part of a well defined syndromelike trisomy 18 (Edwards´ syndrome)[6], Hay-Wells syndrome (a variant of the ectodactyly-ectodermal dysplasia cleft lip palate syndrome)[7,8] the popliteal pterygium syndrome (characterized by intercrural

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webbing of the lower limbs), and CHANDS (curly haira-nkyloblepharon-nail dysplasia syndrome).[3] Therefore, it is important to look for systemic abnormalities.[3] Treatment of Ankyloblepharon is onlyremoval of tissue band from lid margins by simple excision.

CASE REPORT

A 1 month old male infant was presented to our OPD for the assessment of his eyelids of both eye to Sarojini Naidu Children Hospital, Prayagraj, UP, India. He was born at term, weighing 3.6kg. The baby was born at 39 weeks' gestation by normal vaginal delivery to a 27-year-old primi gravid female and 33-year-old healthy male, out of non-consanguineous marriage. The pregnancy was normal and uneventful, with no history of fever, rashes, drug intake or radiation exposure. There was no family history of congenital anomalies. A detailed systemic assessment did not reveal any other systemic congenital anomaly. Ocular examination showed a peripheral band arising from gray lines leading to adherence eyelids (Fig. 1), measuring about 0.5mm breath and 3mm in length.

Fig. 1: Pre-operative

The band of tissue was excised with Radio-Frequency cauteryin sterile conditions under mild sedation (Fig. 2).

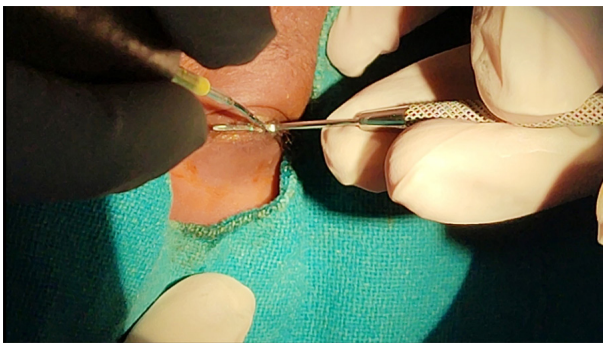

Fig. 2: Intra-Operative cutting of band using rf cautery

Chloramphenicol and Polymixin ointment two times daily for one week was prescribed. The posterior surface of the eyelids, ocular surface, ocular motility, anterior segment and fundus were normal. Intraocular pressures after excision was normal (Digitally). Post-operatively, on day 1 both eyelids were fully opened with no abnormality (Fig. 3). Pediatrician's review of the child indicated no other congenital abnormality, hence the diagnosis of an isolated ankyloblepharon was made.

Fig. 3: Post-operative

DISCUSSION

Ankyloblepharon is a rare benign congenital anomaly, first described by Von Hasner in 1881. Adherance of the lid margins is a normal process in human development, but not a normal condition at birth. The eyelid margins in fetal life remain fused till the 5th month of intrauterine life, but sometimes it may not be completely separated till the 7th month. Ankyloblepharon presents as a single or multiple bands of tissue adhering the eyelids either unilaterally or bilaterally.[4] It may present as an congenital defect not associated with any systemic condition such as in our patient. Yet, it becomes important to actively look for any associated pathology. The ocular association of it is iridogoniodysgenesis with juvenile glaucoma.[5] It has been reported in the context of trisomy 18 (Edwards´ syndrome)[6], Hay-Wells syndrome (a variant of the ectodactyly-ectodermal dysplasia-cleft lip palate syndrome)[7,8], the popliteal pterygium syndrome (characterized by intercrural webbing of the lower limbs), and CHANDS (curly hair-ankyloblepharon-nail dysplasia syndrome). Other associations may include hydrocephalus, meningocele, an imperforate anus, bilateral syndactyly, infantile glaucoma and cardiac problems such as patent ductus arteriosus and ventricular septal defects.[9] Detailed systemic assessment by an experienced pediatrician is therefore imperative in the management of AFA. Rosenman *et al*[10,11] divide AFA into four subgroups (1. isolated; 2. associated with cardiac or central nervous system anomalies; 3. associated with ectodermal syndromes; 4. associated with cleft lip and/or palate) and indicated that groups 1 and 2

were sporadic and groups 3 and 4 were autosomal dominant with variable expressivity. Bacal *et al*[6] suggested a fifth group i.e. in association with chromosomal abnormalities. The aetiology of this abnormality is unknown and a number of theories have been proposed. The currently accepted theory is that this condition is due to an interplay of temporary epithelial arrest and rapid mesenchymal proliferation, allowing union of lids at abnormal positions.[8] This case report demonstrates the simplicity (by using Radio-Frequency Cautery) in treating Ankyloblepharon. Surgical correction should be performed immediately to reduce any risk of amblyopia, and enable full examination of the eye. It also alerts that its presence should alarm the clinician for the possibility of an underlying congenital disorder.

CONCLUSION

Ankyloblepharon is a potentially amblyogenic congenital abnormality of the eyelids and it also highlights that its presence should alert the clinician to the possibility of an underlying congenital disorder. This case demonstrate the simplicity (by using RF cautery) in treating Ankyloblepharon is quick, safe and prevents the risk of stimulus deprivation amblyopia.

Declaration of Patient Consent

Obtained all patient consent forms. The patient(s) attendant has given their written consent for their pictures and other clinical information to be reported in the journal.

Economical Support and Sponsorship: None.

Conflicts of Interest: No conflicts of interest.

REFERENCES

1. Gupta S, Saxena H. Isolated ankyloblepharon filiforme adnatum in a newborn. Int J Ophthalmol Clin Res 2018; 5:086. doi: 10.23937/2378-346X/1410086.
2. Sarowa S, Jain K, Agarwal R. A newborn with an kylo blepharon filiforme adnatum. J Clin Ophthalmol Res 2018; 6:63 5.
3. Bordin G, Valerio E, Cutrone M. Ankyloblepharon filiforme adnatum in a newborn. AJP Rep 2015; 5:e12-3.
4. Judge H, Mott W, Gabriels J. Ankyloblepharon filiforme adnatum. Arch Ophthalmol. 1929; 2: 702-8. PubMed | Google Scholar
5. Scott MH, Richard JM, Farris BK. Ankyloblepharon filiforme adnatum associated with infantile glaucoma and iridogoniodysgenesis. J Pediatr Ophthalmol Strabismus. 1994 Mar-Apr; 31(2):93-5. PubMed | Google Scholar
6. Bacal DA, Nelson LB, Zackai EH, Lavrich JB, Kousseff BG, McDonald-McGinn D. Ankyloblepharon filiforme adnatum in trisomy 18. J Pediatr Ophthalmol Strabismus. 1993 Sep Oct; 30(5):337-9. PubMed | Google Scholar
7. Long JC, Blandford SE. Ankyloblepharon filiforme adnatum with cleft lip and palate. Am J Ophthalmol. 1962 Jan; 53:126-9. PubMed | Google Scholar
8. Vanderhooft SL, Stephan MJ, Sybert VP. Severe skin erosions and scalp infections in AEC syndrome. Pediatr Dermatol. 1993 Dec; 10(4):334-40. PubMed | Google Scholar
9. Anna Maria Gruener, Manjit S Mehat. A newborn with ankyloblepharon filiforme adnatum: a case report. Cases J. 2009 Aug 14; 2:8146. PubMed | Google Scholar
10. Amusini P, Bruel H, Chabrolle JP *et al.* Ankyloblépharon filiforme adnatum. Arch Pédiatr. 2000; 7: 1009-13. PubMed | Google Scholar
11. Rosenman Y, Ronen S, Eidelman AI, Schimmel MS. Ankyloblepharon filiforme adnatum: congenital eyelid-band syndromes. Am J Dis Child. 1980 Aug; 134(8):751-3. PubMed | Google Scholar

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[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, *et al.* Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347-55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3-9.

Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792-801.

Unpublished article

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

Personal Author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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