Original Research Article

Ophthalmic profile of patients in an intensive care unit with protocolised care

Rajani Kadri[1*], Devika Parameshwar[2], Merin Susan Rajan[3], Sudhir Hegde[4], Ajay Kudva[5], Akansha Shetty[6]

Department of Ophthalmology, A. J. Institute of Medical Sciences (AJIMS), Mangalore 575004, Karnataka, INDIA.
Email: rajani_kadri@rediffmail.com

Abstract

Purpose: To document ocular findings in patients admitted in intensive care unit (ICU) with an attempt to improve ophthalmic management protocols and determine the ophthalmologists role in ICU. **Method:** A prospective study was conducted in our hospital ICU. A junior resident examined the patients twice a week. Bedside anterior segment and posterior segment examination was performed. Ocular findings were documented. **Results:** 100 ICU admitted patients were examined. Mean age was 45.51±21.15 years. On ocular examination subconjunctival haemorrhage was observed in 24%, conjunctival chemosis in 15% and corneal epithelial defects in 8%. There were no patients with incomplete lid closure. Mean duration of hospital stay was 7±4 days. **Conclusion:** Meticulous and protocolised eye care can significantly decrease ocular morbidity and improve post ICU quality of life.

Key Words: ICU, ocular surface disorder, corneal epithelial defects.

***Address for Correspondence:**
Dr. Rajani Kadri, Associate Professor, Department of Ophthalmology, A. J. Institute of Medical Sciences (AJIMS), Mangalore 575004, Karnataka, INDIA.
Email: rajani_kadri@rediffmail.com
Received Date: 12/09/2017 Revised Date: 14/10/2017 Accepted Date: 02/11/2017
DOI: https://doi.org/10.26611/1009421

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 04 November 2017

INTRODUCTION

Ocular surface disorders pose a big challenge for ophthalmologists in an ICU setup.[1] Keratopathy is rarely detected by ICU staff unless ocular examination is specifically performed looking for it.[2] Failure to recognise the corneal problems till it reaches advanced stage by ICU staff can result in significant ocular morbidity. In an ICU setup ventilated patients, sedation and muscle paralysis with impaired reflexes predispose to corneal problems.[3,4] Fluid imbalance and positive pressure ventilation may lead to conjunctival chemosis, incomplete lid closure and keratopathy.[5,6] To protect the eyes of ventilated patients various measures have been taken in different ICU setups.[7] The susceptibility of eye to vascular systemic disorders is well known. An ocular examination aids physicians and surgeons in the management of various systemic diseases. Anterior and posterior segment findings in the systemic disorders give practical hints in making a precise diagnosis. This study is an attempt to determine the role of ophthalmologist in ICU.

MATERIAL AND METHODS

A prospective study was conducted in a 31 bed MICU and 14 bed PICU in our institution. The study was conducted in accordance with the Declaration of Helsinki. 100 patients were examined by an ophthalmic resident over a period of 3 months. Documentation of the lid position, conjunctival redness, chemosis and discharge from the eyes was made. Flouorescein staining of corneal epithelium was done and observed with the aid of cobalt blue filter of an ophthalmoscope. Any punctate staining in the cornea was noted. Schirmers test was performed on all the patients. Schirmers strip was inserted into the inferior fornix at the junction of the middle and lateral third of lower eyelid margin for 5 min without topical

How to cite this article: Rajani Kadri *et al.* Ophthalmic profile of patients in an intensive care unit with protocolised care. *MedPulse International Journal of Ophthalmology.* November 2017; 4(2): 18-20. https://www.medpulse.in/Ophthlmology/

anaesthesia. After 5 min wetting was measured in mm. Fundus examination was performed with indirect ophthalmosope and slit lamp biomicroscopy with 90 D lens. ICU staff in our centre practised the protocol of examining the eyes for the presence of lagophthalmos, redness, secretion especially in ventillated patients and started them on artificial tear drops 4 times a day and ointments twice a day. Ophthalmologists altered the treatment regimen according to the status of the subjects by increasing the artificial tears in case of dry eye, corneal erosions, or lagophthalmos or adding antibiotics in case of eye infections. Lagophthalmos was managed by taping of eyelids or tarsorrhaphy when necessary.

RESULTS

Mean age of the patient was 45.51 year with majority being males (71%). Table 1 shows the ophthalmic referral reasons in ICU patients, Table 2 shows anterior segment findings in ICU patients, Table 3 shows posterior findings in ICU patients, RTA was the cause for ICU admission in 23%.

Table 1: Ophthalmic referral reasons in ICU patients

Ocular symptoms	Percent
Discharge	23
Redness	37
Pain and burning	10
Swelling of eye	18
Rule out papilloedema	4
Hypertension	6

Table 2: Anterior segment findings in ICU patients

Anterior segment findings	Percent
Subconjunctival haemorrhage	24
Chemosis	15
Mucopurulent discharge	31
Ecchymosis	11
Corneal epithelial defects	8

Table 3: Posterior segment findings in ICU patients

Posterior Segment findings	Percent
NPDR	24
Hypertensive retinopathy	27
Berlin's edema	4

Mean schirmers test results were 12.2±2.7mm. Mean duration of stay in ICU was 7.2± 4 days.

DISCUSSION

Eye care is an important aspect of nursing management in critically ill patients. However it has remained a neglected issue till a severe ocular problem is encountered. [4] Corneal dryness with subsequent erosions, infectious ulceration can occur in ICU patients whose ocular protective mechanism is compromised.[3,8,9,10] The most prevalent ocular disorders identified in ICU patients were exposure keratopathy (3.6%-60%), chemosis (9%-80%), followed by microbial keratitis. [11, 12,] Corneal epithelial defects were observed in 8% of our ICU patients. We did not observe any patient with corneal infections. In a study by Hernandez and Mannis superficial keratopathy was detected in 20((40%).[8] A prospective study by Mercieca *et al*[9] found an erosion rate of 42% in 26 patients; erosion was strongly associated with incomplete lid closure and deep sedation. A close relationship was observed between the ocular surface disorders and the inability to close one's eyes by Imanaka H and co-workers. [10] During the period of our study there were no critically ill patients with incomplete eye lid closure. ICU patients are also susceptible to infections due to compromised immune status. Routine eye care protocol with eye hygiene, tear substitutes and antibiotics (moxifloxacin) in sedated and ventilated ICU patients at our centre can explain the reduced incidence of corneal problems in our study. Mercieca *et al* performed a second study after the implementation of an eye care protocol based on regular use of ocular lubricants, and taping of incompletely closed eyes. This study found a substantially reduced corneal erosion rate of only 8.7% in 23patients similar rate as our study in whom the protocol had been correctly applied.[13] Guidelines have been proposed by many researchers for eye care in ICU for, this can reduce ocular surface disorders.[1,7] Training of nurses to identify corneal exposure, lid position assessment, instill eyedrops can reduce the complications.[2,14,15,16] As the corneal epithelial defects are considered preclinical stage of microbial keratitis, they need to be identified early and treated especially in ventilated patients as it carries a poor prognosis.[17] Screening of patients for fundus pathology in diabetics and hypertensives helps in early referral and management in post ICU period. In our study none of the diabetics had proliferative retinopathy and needed treatment in the post ICU period. Post trauma (road traffic accidents) patients need to be screened for retinal findings like Berlins edema, traumatic retinal tears, detachment, optic neuropathy in addition to anterior segment findings. Berlins edema seen in four of our study patients were followed up. Though we didn't observe any dryness in our ICU patients, multifactorial dryness of eye in ICU patients[17] needs to be tackled at an early stage to prevent significant ocular morbidity. The main limitation of this study is the small sample size and short duration of the study

CONCLUSION

Regular screening by ICU staff, protocolised care and prompt ophthalmic referral can significantly decrease the ocular morbidity and improve the quality of life following discharge.

REFERENCES

1. Fernando Ramírez, Sergio Ibarra, Joseph Varon, Rosa Tang. The Neglected Eye: Ophthalmological Issues in the Intensive Care Unit. Crit Care and Shock (2008) 11: 72 - 82.
2. McHugh J, Alexander P, Kalhoro A, Ionides A. Screening for ocular surface disease in the intensive care unit. Eye. 2008; 22(12):1465–1468.
3. Saritas TB, Bozkurt B, Simsek B, Cakmak Z, Ozdemir M, Yosunkaya A. Ocular Surface Disorders in Intensive Care Unit Patients. The Scientific World Journal. 2013; 2013:182038. doi:10.1155/2013/182038
4. Dawson D. Development of a new eye care guideline for critically ill patients. Intensive Crit Care Nurs. 2005 Apr; 21(2):119-22.
5. Kirwan JF, Potamitis T, El-Kasaby H, Hope-Ross MW, Sutton GA. Microbial keratitis in intensive care. BMJ 1997; 314: 433–434.
6. Wincek J, Ruttum MS. Exposure keratitis in comatose children. J Neurosci Nurs 1989; 21: 241–244.
7. Dawson D (2005) Development of a new eye care guideline for critically ill patients. Intensive Crit Care Nurs 21:119-122
8. Hernandez EV, Mannis MJ. Superficial keratopathy in intensive care unit patients. American Journal of Ophthalmology. 1997;124(2):212–216
9. Mercieca F, Suresh P, Morton A, Tullo A. Ocular surface disease in intensive care patients. Eye 1999; 13: 231–236.
10. Imanaka H, Taenaka N, Nakamura J, Aoyama K, Hosotani H. Ocular surface disorders in the critical ill. Anesth Analg. 1997; 85(2):343-6.
11. Desalu I, Akinsola F, Adekola O, Akinbami O, Kushimo O, Adefule-Ositelu A. Ocular surface disorders in intensive care unit patients in a Sub-Saharan teaching hospital. Internet J Emerg Intensive Care Med. 2008;11(1)
12. Ezra DG, Lewis G, Healy M, Coombes A. Preventing exposure keratopathy in the critically ill: a prospective study comparing eye care regimes. Br J Ophthalmol. 2005; 89(8):1068-1069.
13. Suresh P, Mercieca F, Morton A, Tullo A. Eye care for the critically ill. Intensive Care Med 2000; 26: 162–166.
14. Farrell M, Wray F. Eye care for ventilated patients. Intensive and Critical Care Nursing. 1993; 9(2):137–141.
15. Koroloff N, Boots R, Lipman J, Thomas P, Rickard C, Coyer F. A randomised controlled study of the efficacy of hypromellose and Lacri-Lube combination versus polyethylene/Cling wrap to prevent corneal epithelial breakdown in the semiconscious intensive care patient. Intensive Care Medicine. 2004; 30(6):1122–1126.
16. Lenart SB, Garrity JA. Eye care for patients receiving neuromuscular blocking agents or propofol during mechanical ventilation. American Journal of Critical Care. 2000; 9(3):188–191.
17. Araújo DD, Almeida NG, Silva PMA, Ribeiro NS, Werli-Alvarenga A, Chianca TCM. Prediction of risk and incidence of dry eye in critical patients. Rev. Latino-Am. Enfermagem. 2016;24 :e2689.

Source of Support: None Declared
Conflict of Interest: None Declared