



ASSESSMENT OF DRY EYE IN INTENSIVE CARE UNIT PATIENTS

Ophthalmology

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ABSTRACT

AIM: To access the incidence of dry eye in patients who were admitted in intensive care unit. **Materials And Methods:** A prospective case control study among sixty patients aged between 20-70 years who were hospitalized in intensive care unit due to various diseases in a tertiary care hospital For more than seven days. The patients were assessed by Schirmer's test 1 and ocular surface damage assessment by corneal staining using fluorescein dye. **Conclusion:** Incidence of dry eye was 10% on 7th day and 15% on 14th day. Prevalence of dry eye was more in the older age group. As the patients in the intensive care unit are more susceptible to develop dry eye, they should consulted by an ophthalmologist for early diagnosis of ocular surface disorders and prevent permanent damage in eye.

KEYWORDS

Ocular surface disorders , Schirmer's test, DES – Dry eye syndrome, ICU – Intensive care unit

INTRODUCTION

Dry eye syndrome is a multi factorial disease of the ocular surface characterized by a loss of homeostasis of the tear film¹. It is a significant but often undiagnosed in the intensive care unit (ICU) setting. Critically ill patients are especially vulnerable to developing dry eye due to several contributing factors such as mechanical ventilation, the use of sedatives and muscle relaxants, and a reduced blink reflex.² The aim of our study is to know the incidence of dry eye in patients admitted in intensive care unit⁵.

MATERIALS AND METHODS

It is a prospective case control study of 85 patients admitted in intensive care unit of a tertiary care hospital. Among them 15 patients were excluded according to the exclusion criteria⁶. Among them 24 patients were ventilated and 34 patients were non ventilated who were included in this study.

Inclusion Criteria

This study included patients aged between 20 - 70 years who were hospitalized in intensive care unit for more than seven days⁷.

Exclusion Criteria

- Patients on systemic medication which cause dry eye.
- Lacrimal obstructive diseases.
- Burn or chemical injury.
- Post radiation fibrosis
- Primary or secondary lacrimal gland deficiency.
- Disorders of lid.⁸

After getting consent from patient's relatives, detailed anterior segment examination was done on 7th day and 14th day of hospitalization.

To determine the rate of tear secretion Schirmer's test 1 was done by inserting a Schirmer's test strip into the inferior fornix, at the junction of middle and lateral one third of the lower lid margin for 5 minutes without applying topical anaesthesia. At the end of 5 minutes that strip was carefully taken out and the length of the wet strip was measured in millimetres (mm). The measured value less than 10 millimetre was considered as abnormal.

Ocular surface assessment was done by using fluorescein dye strip after applying topical anaesthesia 0.5% proparacaine and the cornea epithelium damage was evaluated by using a cobalt blue filter of the portable slit lamp. The study was analysed by using SPSS software by Student's T test and the analysis of non - parametric values were done by Mann-Whitney U test. P Value of less than <0.005 was considered significant. Patients who were detected with dry eye started on empirical treatment with artificial tear drops four times per day and

lubricating ointments twice daily.

RESULTS

In our study we selected 85 patients who were admitted in intensive care unit. Among them 15 patients we are excluded according to the exclusion criteria.

Among the total patients of 60 there were 38 men and 22 women who were included in this study. Nine male patients and six female patients developed dry eye. The prevalence was more in older age group. According to the duration of hospital stay, Six patients(10%) Where diagnosed with dry eye on 7th day and nine patients(15%) Developed dry eye on 14th day. 9 patients who were not under ventilation developed dry eye and 6 patients who were under ventilation developed dry eye.

The following table 1 were the Schirmer's test value of the patients admit it in intensive care unit developed dry eye.

Table – 1 Schirmer's test value in mm/5 min

	Schirmer's Test value	
Mechanical ventilation	Right eye	Left eye
Yes	7 +/- 4.5	7.5 +/- 4.9
No	8 +/- 7.2	8.9 +/- 7.2
P value	0.29	0.37

DISCUSSION

The Study revealed that a substantial number of ICU patients developed DES during their stay, primarily due to factors such as mechanical ventilation, use of sedatives, and a reduced blink reflex. In various studies Schirmer's test used as a method to detect dry eye. In the study Saritas T Bet al¹ The incidence of dry eye was 40% when considering Schirmer's value <5mm and in Ramamoorthy K¹⁰ et al study the incidents was 10% on 8th day and 17% on 14th day when considering Schirmer's value less than 10 millimetre. In this study 10% patients were diagnosed with dry eye on 7th day and 15% patients were developed dry eye on 14th day. In this study there was no significant difference of dry eye in patients either on ventilation or sedation or not.

Another study suggested that ICU patients who received sedation developed corneal abrasion detected in 42% cases in first week of hospitalization.⁷ Implementing structured and evidence-based eye care protocols, including the use of artificial tears gel, can effectively manage and prevent DES, improving patient comfort and reducing the risk of ocular complications.

CONCLUSION

In our study, 15 out of 60 patients admitted in ICU were detected with dry eye after one week of hospitalization and the incidence of dry eye was increased with longer duration in hospital stay. The prevalence of dry eye was more in old patients. There was no significant difference of dry eye in patients either on ventilation or not. Hence continued education on the importance of eye care in ICU settings are essential to enhance patient outcomes and ensure comprehensive care for critically ill patients.

REFERENCES

- [1]. The definition and classification of dry eye disease: report of the Definition and Classification Subcommittee of the International Dry Eye WorkShop (2007). *Ocul Surf* 5(2), 2007, 75-92.
- [2]. Alves M, Fonseca EC, Alves MF, Malki LT, Arruda GV, Reinach PS, et al. Dry eye disease treatment: a systematic review of published trials and a critical appraisal of therapeutic strategies. *Ocul Surf*. 11(3), 2013, 181-92.
- [3]. Tuba Berra Saritas, ¹ Banu Bozkurt, ² Baris Simsek, ¹ Zeynep Cakmak, ³ Mehmet Ozdemir, ⁴ and Alper Yosunkaya ¹. Ocular Surface Disorders in Intensive Care Unit Patients. *ScientificWorldJournal*. 2013.
- [4]. Imanaka H¹, Taenaka N, Nakamura J, Aoyama K, Hosotani H. Ocular surface disorders in the critically ill. *Anesth Analg*. 1997.
- [5]. Alavi NM, Sharifitabar Z, Shaeri M, Hajbaghery MA. An audit of eye dryness and corneal abrasion in ICU patients in Iran. *Nurs Crit Care*. 19(2), 2013, 73-7.
- [6]. American Academy of Ophthalmology Cornea/External Disease Panel. Preferred Practice Pattern Guidelines. Dry Eye Syndrome.
- [7]. Nember J. Eye Care for Patients in the ICU. *Best Practice – The Joanna Briggs Institute*. 106, 2006, 72A-72D
- [8]. Bloomenstien M, Cunningham D, Gaddie IB, Karpecki P, Morris S, Nichols K. Improving the screening, diagnosis, and treatment of dry eye disease: expert recommendations from the 2014.
- [9]. Methods for Detection of Dry Eye in Critically Ill Patients: an Integrative Review *International Archives of Medicine Section: Ophthalmology* ISSN: 1755-7682.
- [10]. Kalpana R et al / *Int.J.of Allied Med.Sci, and Clin.Research* Vol – 5 (1) 2017 [247 – 252]
- [11]. *J Evid Based Med Healthc*, pISSN - 2349-2562, eISSN - 2349-2570 / Vol. 8 / Issue 11 / Mar. 15, 2021
- [12]. Grixiti A, Sadri M, Edgar J, Datta AV. Common ocular surface disorders in patients in intensive care units. *The Ocular Surface*. 2012;10:26–42. [PubMed] [Google Scholar]