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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

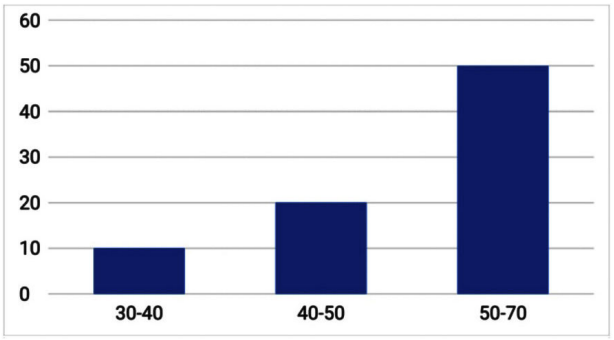
To study the various ocular manifestations in long staying ICU patients & importance of eye examination and care in all long staying ICU patients.

METHODOLOGY

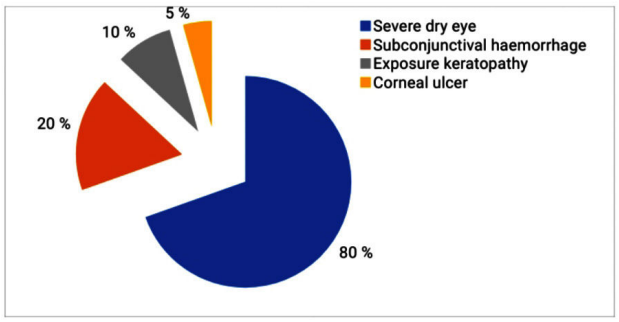
A prospective study was conducted on a total of 100 patients who were admitted between July & September (2023) to the ICU of Navodaya Medical College, Raichur. Ocular findings were documented for diabetes mellitus, hypertension, anaemia, cerebral vascular accident, alcohol withdrawal, chronic kidney 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.

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