

Proportion of Dry Eye in Hepatitis C Patients

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Purpose: The main purpose of this study was to find out the proportion of dry eye in patients of hepatitis C.

Study Design: Descriptive cross sectional study.

Duration and Place of Study: Department of Ophthalmology, Alhaded Trust Hospital, Lahore. Duration of study January 2017 to August 2017.

Material and Method: The study was conducted on 61 patients having positive history of hepatitis C with age range of 25-65 years. The sample size was collected by non-probability convenient method. All patients were diagnosed with Hepatitis C by Department of Medicine, Alhaded trust hospital after PCR. Patients of all other ages or having any other systemic disorders were excluded from the study. Schirmer test was used for the measurement of tear film breakup time. Data was collected by a self-designed proforma after written informed consent. Data entry and statistical analysis was done by Arithmetical Software SPSS.

Results: Total 61 patients were included in the study. Out of 61 patients, 28 (45.9%) were females and 33 (54.1%) were males. There were 18 (29.5%) patients who were 25 to 35 years of age and 27 patients (44.3%) had age of 36 to 50 years. There were 16 patients (26.2%) who were 51 to 65 years of age. There were 17 (27.8%) patients who had normal tear breakup time, 14 (22.9%) had moderate tear breakup time and remaining 30 (49.1) had severely reduced tear breakup time.

Conclusion: In patients of Hepatitis C, dry eye disorder is commonly present. Therefore, all patients with dry eyes should be evaluated for Hepatitis C.

Key words: Dry eye disorder, hepatitis C.

Tear film is a layer that sustains and lubricates the surface of the eyeball. Tears are constantly retained and dissipated from the visual surface to prevent the effects of dry eye. Tear film is made up of following three layers, a Mucin layer which is produced by conjunctival goblet cells and epithelial cells of the eye¹. It provides hydrophilic surface to stabilize aqueous against hydrophobic epithelium. An aqueous layer consisting primarily of water produced by lacrimal gland and accessory lacrimal gland and an external layer consisting of polar and non-polar lipids, which are produced by Meibomian glands. The lipid layer of tear film is essential for stability², and prevents

evaporation of aqueous layer. Keratoconjunctivitis sicca (KCS), one of the main features of Sjogren's syndrome, is the lack of sufficient quality or quantity of lacrimal gland secretions to maintain the tear film and ocular surface^{3,4}.

Around 3.6 million people in the United States are infected with hepatitis C infection (HCV), having both hepatic and extrahepatic sequelae⁵. Chronic HCV contamination has been related with distinctive condition which may, or may not, be casually connected to the hepatic infection⁴. The infection is typically associated with contamination and

stimulates progressive liver disorder in a widespread range of patients over a time of a few decades⁶.

A wide range of visual issues have been associated with HCV disease, Around 10% of tear test detected hepatitis C RNA, indicating the capability of disease transmission through tears^{7,8}. The most well-known visual manifestation of hepatitis C infection includes keratoconjunctivitis sicca, Mooren's ulcer and ischemic retinopathy^{9,10}. As of now, the visual associations of HCV diseases include dry eye disorder like Sjögren syndrome and ischemic retinopathy caused either by an HCV-incited vasculitis or treatment with interferon¹¹. Screening for HCV should be considered in patients with risk factors for HCV contamination who experience the ill effects of unexplained ischemic retinopathy or dry eyes¹². One study showed Hepatitis C infection (HCV) in tear tests of 71 patients with untreated HCV disease^{13,14}. Another study showed decreased tear production in HCV patients as estimated by the Jones test.¹⁵ Utilizing polymerase chain reaction test another study showed HCV RNA in 10% of 52 tear tests¹⁶.

MATERIAL AND METHODS

A cross sectional study was conducted on 61 patients having positive history of hepatitis C with age range of 25 - 65 years. The Sample size was collected by non probability convenient method. All patients were diagnosed with HEPATITIS C by Medicine department of Alhaded trust hospital after PCR. Patients of all other ages or having any other systemic disorders were excluded from the study. Schirmer's test was used for the measurement of tear film breakup time. Data was collected by a self-designed proforma after written informed consent. The data was entered and investigated by Arithmetical Software SPSS.

RESULTS

Table 1 shows 61 patients were involved in study. Out of 61 patients 28 (45.9%) were females and 33 (54.1%) were males.

Table 1: Gender.

	Frequency	Percent
Female	28	45.9
Male	33	54.1
Total	61	100.0

Table 2 shows that out of 61 patients, 18 (29.5%) people had 25 to 35 years of age, 27 (44.3%) had 36 to 50 years of age and remaining 16 (26.2%) were 51 to 65 years old.

Table 2: Age Distribution.

	Frequency	Percent
25-35	18	29.5
36-50	27	44.3
51-65	16	26.2
Total	61	100.0

Table 3: Tear Breakup Time in Right Eye.

	Frequency	Percent
Normal	17	27.8
Moderate	14	22.9
Severe	30	49.1
Total	61	100.0

Table 3 shows that out of 61 patients, 17 (27.8) patients had normal tear breakup time, 14 (22.9%) had moderate tear breakup time and remaining 30 (49.1) had severely decreased tear breakup time.

Table 4: Tear Breakup Time in Left Eye.

	Frequency	Percent
Normal	17	27.8
Moderate	14	22.9
Severe	30	49.1
Total	61	100.0

Table 4 shows that out of 61 patients 17 (27.8) had normal tear breakup time, 14 (22.9%) had moderate tear breakup time and remaining 30 (49.1) had severely reduced tear breakup time.

DISCUSSION

The study shows dry eye and ocular surface changes related to tear film by schirmer test in hepatitis C patients. So tear film components reduced in patients with Diagnosed hepatitis C. To evaluate the ocular surface and systemic factors related to hepatitis C which shows tear film values related to age and sex. Dry eye is most common in older patients as patients get older ocular surface become dry. Corneal changes

are also related with the Interferons therapy which suggests that patients could have abnormalities in cornea. Some studies showed reflex of tear film secretions which did not change².

In hepatitis C, microvasculature of lacrimal gland is associated with impaired function of gland. In hepatitis C patients increased rate of dry eye is associated with tear film osmolarity and decreased corneal sensitivity. Most of the hepatitis C complain of itching and burning sensation. TBUT values for hepatitis C and normal subjects are different due to the symptoms of dry eye in hepatitis C patients. Hepatitis C individuals with dry eye have high frequency of dry eye symptoms as compared to normal subjects¹⁵.

Studies found that women reported dry eye symptoms than men and which has etiology of multifactorial condition, in most cases, is chronic. Dry eye syndrome is a source of discomfort that affects the patient's quality of life, especially in older population. There are many methods to assess the dry eye. However, there is no common combination of tests which conclusively diagnose the dry eye. A key aspect of dry eye that remains a major problem is the lack of association between the symptoms and signs of dry eye and the poor test reproducibility of objective tests making it difficult to assess disease progression or the impact of treatments on symptoms. Currently, the major management for those patients with dry eye disease consists of palliative regimens such as lubricating drops, which target symptoms alone, with no treatment modality available that truly "treats" the underlying cause of the disease. The necessity for characterizing and understanding the underlying biomarkers in the ocular surface cells that are involved in the disease process may be beneficial in targeting towards treatment strategies¹³. In Hepatitis C patients, microvasculature of lacrimal gland is associated with impaired function of gland. In Hepatitis C patients increased rate of dry eye is associated with tear film osmolarity and decreased corneal sensitivity. Most of the subjects complain of itching and burning sensation. Our investigation was intended to decide if there was a high predominance of clinically significant visual injuries in patients with HCV disease¹⁷. The chance that HCV causes noteworthy dry eye disorder most probably keratoconjunctivitis¹⁸, will probably be distinguished in patients with the further developed types of HCV. In studies that are currently available there is a difference in dryness of eyes with the time span and severity of hepatitis C¹⁹. The females having

positive history of hepatitis C have more chances of dry eye disorder as compared to males. The autoimmune disorder known as Sjogren's disorder having feature of dry eye is observed in many subjects of hepatitis C²⁰. The ocular manifestations of HCV also cause dry eye disorder mostly sjogren syndrome which is autoimmune disorder in which tear breakup time decrease as compare to normal. HCV also causes ischemic retinopathy and vasculitis due to injection interferons. Another previous study suggested that HCV causes dry eye disorder keratoconjunctivitis sicca in which the function of lacrimal gland compromised and tear production decreased. Due to decreasing tear production in keratoconjunctivitis the maintenance of tear film disturbed the ocular surface. This type of dry eye severity is due to interferons.²⁰

CONCLUSION

It is concluded that most of the Hepatitis C patients suffer from dry eye disorder. Therefore, hepatitis C infection should be considered a risk factor for dry eye disease.

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