

PREVALENCE OF CORNEAL ULCER AMONG CONTACT LENS WEARERS IN NIGERIA.

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ABSTRACT

Corneal ulceration has been described as the most serious complication of contact lens wear worldwide. The incidence of corneal ulceration in contact lens wearers in Nigeria was determined retrospectively. 1759 case notes of patients who had worn contact lenses for at least one year were obtained from eye clinics in Lagos, Abuja and Port Harcourt. The incidence of corneal ulcer was 1.33 per 100 wearers over the 5-year period (January 1994 –December 1998), with an annual incidence of 0.27 per 100 wearer. Disposable extended wear soft lenses had the highest incidence of 2.94 per 100 closely followed by rigid gas permeable lenses 2.86 per 100. There were no corneal ulcers among conventional daily wear soft lens users. Males showed more cases of corneal ulceration 1.63% than females 1.24% and the age group of 10-19 years had the highest rate of corneal ulcerations (1.66%). It is therefore important for contact lens practitioners to encourage patients to comply with their lens case regimen or switch to daily wear lenses.

KEYWORDS: Contact lenses, Corneal ulcers, Lens type, Age.

INTRODUCTION

The use of contact lenses for the correction of refractive error as well as for cosmetic purposes is still relatively new in Nigeria. However it is becoming increasingly popular among the educated urban dwellers and as such complications arising from contact lens wear are on the increase. Contact lenses used today are either soft lenses or rigid gas permeable lenses. The soft lenses can be worn either on a daily basis and removed at night (called daily wear lenses) or worn over several days without removal (called extended wear lenses). Soft contact lenses can also be termed disposable or conventional. Disposable refers to those contact lenses which are worn for only a short time e. g. for two weeks or one month and then discarded. Each manufacturer determines the maximum period of use. Conventional on the other hand are those contact lenses which are cleaned and disinfected regularly and can be used for as long as the wearer desires. Therefore generally there are four types of soft contact lenses: disposable daily wear, disposable extended wear, conventional daily wear and conventional extended wear.

Studies have shown that ulcerative keratitis is the most serious complication of contact lens wear (Gray et al, 1995) and that virtually all contact lens users are at risk (Palmer and Hynduik, 1993). The majority of infections

are attributed to *pseudomonas aereuginosa* (Palmer and Hynduik, 1993, Cohen et al, 1987, Alphonso et al, 1986, and Derick et al, 1989). Brewitt (1997) in his study noted that contact lens wearers were subject to increased risk of infection. He found that the factors that determined this over proportional risk included, insufficient cleaning and disinfecting and over extended wear of the lens. He also noted that the frequency of complication in contact lens wear generally is the result of poor hygiene in 66% of cases.

Various other studies have been carried out to determine the lens material that is most susceptible to ulceration (Silbert 1990). It has been shown that extended wear of conventional and disposable soft lenses have a significantly higher risk of ulcerative keratitis than daily wear (Cohen et al, 1987, and Derick et al, 1989, Silbert 1990, Poggio and Abelson 1993). Some workers in their study of 2,433 cosmetic contact lens wearers, found that the incidence of all complications among disposable extended lens wearers did not differ significantly from the incidence found with conventional extended wear, but was significantly higher than the incidence in conventional daily wear (Poggio and Abelson 1993, Hardings et al 1995). The incidence of corneal ulcer among rigid gas permeable lens wearer was significantly higher than that among daily wear soft lens users but less than that among extended wear soft lens users (Poggio

and Abelson 1993).

In addition to the types of contact lens, the lens care system used by the patient may be a major factor in the development of corneal ulcers. Wilson et al (1981) in their study showed that lens care problems are often at the root of contact lens problems. These problems may be either due to contamination or to allergic reactions. Several

studies have shown that the lens care system used by the patient plays a significant role in determining the degree of contamination present after disinfection of contact lenses (Brewitt, 1997; Wilson et al 1981, Kanpolat, 1990). In a study of patients who used three different care regimen for their lenses, contamination was found in 76% of the lens care system, 57% of the lens cases and 17% of the patients had conjunctival contaminants (Kanpolat, 1990).

Compliance and poor hygiene is another causative factor of corneal ulcer in contact lens wearers. It has been said that more than 50% of contact lens wearers are likely to be poor compliers (Smith 1996). It has also been noted that insufficient cleaning and disinfection of lenses can lead to contamination with pathologic germs (Brewitt, 1997). This is of particular importance in Nigeria where many of the patients may want to economize their cleaning and disinfecting solutions due to economic reasons. It has also been suggested that education is a major factor which influences compliance among patients (Brewitt, 1997). In a country where majority of the population are uneducated and so may have problems comprehending instructions, this may play a major role in compliance.

PATIENTS AND METHOD

This study was done retrospectively, and it involved a review of the case notes of patients from three major cities in Nigeria i.e. Lagos, Abuja and Port Harcourt. The eye clinics reputed for contact lens practice in these cities i.e. Truvision, Unique Eye Center and Insight Eye Clinic were used. Case notes of all patients seen in these clinics between January 1994 and December 1998 were examined, all patients for whom contact lenses was prescribed were identified those who had worn their lenses for at least 1

year and who had complete records were included in the study.

The information extracted from the case notes were the patients personal data, such as, age, sex, relevant medical history, lens type used, wear schedule and any problems or complications seen. All casenotes, which lacked any of these pieces of information, were excluded from the study.

RESULTS

Of the casenotes seen, 2014 were contact lens wearers, and 1759 (87.34 %) had worn their lenses for at least 1 year, and had complete records. Of this number, 24 cases of corneal ulcers were recorded during this period (5 years), giving an incidence of 1.36 in every 100 contact lens wearers and an annual incidence of 0.27 per 100 wearers of contact lenses.

The female wearers were twice as many as the male wearers i.e. 1206 (68.56%) females to 553 (31.44%) males. Amongst the females, 15 (1.24%) developed corneal ulcers while 9 males (1.63%) developed corneal ulcers.

The age range of the contact lens wearers was 9-62 years with a mean of 26.97, standard deviation ± 7.50 years. The highest number of contact lens wearers was in the age bracket 20-29 representing 62.76% of wearers, the ages 30-39 had 20.3% of wearers, 10-19, 10.29% and 40-49, 4.71%, ages 0-10, 50-59 and 60-69 all represented less than 1% each.

The mean age of subjects with corneal ulceration was 25.73 years, standard deviation ± 7.37 , while the mean age of all wearers was (26.96 \pm 7.50). The ages 10-19 had the highest incidence of corneal ulcers (1.66%) followed by 30-39 (1.6%) then 20-29 (1.268%) and then 40-49 (1.2%) there were however, no corneal ulcers in the age groups 0-10, 50-59 and 60-69. This is shown in table 1.

The various lens types used were disposable daily wear (DDW) soft lenses, disposable extended wear (DEW) soft lenses, conventional extended wear (CEW) soft lenses, conventional daily wear (CDW) soft lenses and rigid gas permeable lenses. Table 1 shows the number of wearers and the number of ulcers in each group.

TABLE 1: PROPORTION OF EACH AGE GROUP WHO DEVELOPED CORNEAL ULCERS. S.

Age	No. of Wearer	No. of Corneal Ulcers	% of Group
0 - 9 yrs.	7	0	0
10 - 19 "	181	3	1.66
20 - 29 "	1104	14	1.27
30 - 39 "	375	6	1.6
40 - 49 "	85	1	1.2
50 - 59 "	6	0	0
60 - 69 "	3	0	0

TABLE 2 DISTRIBUTION OF CORNEAL ULCERS AMONG LENS TYPES

Lens Types	No. of Wearer	No. of Corneal Ulcers	% of Group
Disposable DW	9	0	0
Disposable EW	170	5	2.94
Conventional DW	55	0	0
EW	1490	18	1.21
RGP	35	1	2.86
Total	1759	24	1.36

DEW soft lens users had the highest incidence of corneal ulcers (2.94%) this was closely followed by RGP users (2.86%), then CEW soft lenses in which 1.21% of wearers had corneal ulcers. There were no ulcerations in CDW soft lens users. This is shown in Table 2.

The annual incidence of corneal ulcer for DEW was 0.588 per 100, CEW was 0.242 per 100 and RGP was 0.571 per 100.

DISCUSSION

This study involved the three main cities in Nigeria where most of the contact lenses used in the country are frequently dispensed and they may be said to represent the three major geopolitical zones of Nigeria. It involved the major clinics known for contact lens practice in these cities.

Corneal ulcers were found to have an annual incidence of 0.27 per 100 wearers. This is much higher than the incidence shown by previous research in developed countries where incidence was less than 10 per 10,000 wearers (Silbert, 1990; Poggio and Abelson 1993). This means that contact lens users in Nigeria may be 10 times as likely to develop corneal ulcers as their counterparts in the developed world. There are many possible reasons for these, they include, (1) The attitude of the people to health in general, the eyes inclusive, where medical attention is not sought for a problem early enough to prevent serious complications. (2) There is also the fact that Nigerian practitioners are much less experienced than their counterparts in the developed countries as contact lens awareness is just developing in Nigeria. (3) The unavailability of a wide range of lens choices and solutions may also lead to less than optimal lens care and fits, resulting in problems. (4) Our patients in Nigeria are more likely to be poor compliers due to low levels of education and the many social, infrastructural and economic problems they have to contend with. Unlike in other studies where the incidence of corneal ulcers was found to decrease with age (Koidou-Tsilugianni et al 1989), this study showed that the incidence was highest in the 10-19 years, (1.66%) followed by

30-09(1.6%) while the lower and higher age groups had less ulceration. This may be due to the fact that there were very few patients who use contact lenses at the extremes i.e. less than 10 years and over 50 years, and as such a proper incidence could not be determined.

It was also shown that males had a higher incidence than females i.e. 1.63% in males compared to 1.24% in females; this is in agreement with studies carried out by various researcher (Silbert, 1990, Poggio and Abelson, 1993). This could be attributed to the fact that females are known to be more motivated and more compliant (Iliesgange, 1997). It has been shown that corneal ulceration is mostly due to none compliance with the recommended care regime (Smith, 1996).

In this study there were very few users of daily wear disposable lenses. This could be due to the unavailability of such lenses, as well as the high cost involved in its use. There was no occurrence of ulceration in the conventional daily wear soft lenses. This was probably attributed to the small number of subjects who use these lenses. However the highest incidence of corneal ulceration was in the wearer of disposable extended wear lenses. This is likely to be due to the fact that many of the wearers are non-compliant, using the lenses for much longer than they should before disposing of them, which can

be attributed to the low economic power of the patient. The incidence of ulceration among disposable extended wear users, was closely followed by that in rigid gas permeable lens users, and finally, conventional extended wear lens users. These results are at variance with several studies which have shown that conventional extended wear users show a higher incidence of ulceration (Silbert, 1990; Chalupa, 1987; Weissman et al, 1984), than disposable extended wear, before rigid gas permeable lenses. This variation may be due to the peculiarities of contact lens use in the Nigerian society, some of which have been stated above.

CONCLUSION

This study has shown that extended wear soft lenses especially the disposables and rigid

gas permeable lenses have a much higher risk of corneal ulceration than conventional daily wear soft lenses. It was also shown that most contact lens users in Nigeria wear extended wear lenses. Against this background, it is important for practitioners to emphasize the need for sticking to the recommended wearing and replacement schedule, and where possible, patients should be encouraged to switch to daily wear lenses

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