WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 8, 2247-2251. Research Article ISSN 2277– 7105

SLIT LAMP PHOTOGRAPHY OF CATARACTOUS HUMAN LENS - A COMPARISION OF THE COLOURATION AND TYPES OF CATARACTS

Dr. Ajit V Pandya*

Hod-Biochemistry Dept, C U Shah Sc. College.

Article Received on
25 June 2015,

Revised on 15 July 2015,
Accepted on 01 Aug 2015

***Correspondence for Author**
Dr. Ajit V Pandya
Hod-Biochemistry Dept, C U Shah Sc. College.

ABSTRACT

Cataract is responsible for significant visual impairment with human etiologies. Annually 2-3 million people become blind due to cataract. Risk factors include diabetes, smoking tobacco, prolonged exposure to sunlight, and alcohol. Either clumps of protein or yellow-brown pigment may be deposited in the lens reducing the transmission of light to the retina at the back of the lens of human eye. The binocular slit-lamp examination provides a stereoscopic magnified view of the lens in eye. With fully dilated pupil, slit lamp photography of lenses was done. The types of cataract were judge by ophthalmologist and also compared with Chylack's classification.

KEYWORDS: Slit lamp photography, cataract, human lens.

INTRODUCTION

A WHO report on blindness in different countries show widely varying percentage of blindness due to cataract as shown below.

Countries	% of blindness due to cataract
Ceylon	28
China	07
England	22
India	39
Israel	28
Kenya	46
U.S.A.	22

Senile cataract is responsible for significant visual impairment with human etiologies. The magnitude of this overburden of cataract in the developing countries is indicated by a survey in Punjab in India (Chatterjee et al., 1982).

Symptoms may include faded colors, blurry vision, halos around light, trouble with bright lights, and trouble seeing at night. Cataracts are the cause of half of blindness and 33% of visual impairment worldwide.

The most common form of cataract is the "Senile cataract" occurring in the aged population, which has great socio medical prevalence for many third world countries, where annually 2-3 million people become blind due to cataract. Blindness from cataracts occurs in about 10 to 40 per 100,000 children in the developing world and 1 to 4 per 100,000 children in the developed world which cannot be treated by surgical removal because of the lack of facilities, surgeons and shortage of funds. However, these cataracts are the result of age-related alterations in lens metabolism and a combination of risk factors.

Prior to 1976, so little research was being done on the mechanisms of human cataract formation – that a useful system of classifying the features of a senile cataract was unavailable. Most of the 5, 00, 000 cataracts extracted each year were discarded after a gross pathological examination, this was possible only because there was so little demand for human lenses for study.

A single primary cause of cataract most likely does not exist. Epidemiological literature indicates that the prevalence of cataract is related to geographical location, climate and sun hours (Hiller et al., 1977, Zigman etal.,1979). Risk factors include diabetes, smoking tobacco, prolonged exposure to sunlight, and alcohol.

Number of other risk factors also contributes to the incidence of cataract. In the third world countries like India these includes: more than one attack of severe diabetes, malnutrition, prolonged diabetes, low education, residence in slums etc. Whereas in western countries with better living conditions the risk factors includes diabetes, renal failure, rampant use of tranquilizer, corticosteroids, alcohol, cigarettes etc. (Harding, 1991).

Either clumps of protein or yellow-brown pigment may be deposited in the lens reducing the transmission of light to the retina at the back of the eye.

The yellow and brown protein fractions are uniquely associated with different types of cataract especially nuclear cataract and increases with the progression of the cataract (Pandya Ajit, 2010). The brown color of lens in brown cataract is due to very high amount of brown fraction of protein. It contain about 637 times higher amount of brown fraction compared to yellow fractions of protein. The color of les is due to glycation and aggregation of lens proteins.

The term cataract implies opacification of the lens, this being almost without exception the only pathological change which the lens can undergo. The adjective “senile” has become attached to the most common of all forms of cataract, about the precise etiology of which nothing is known because cataract is a multifactorial process in which many intrinsic and extrinsic factors act cumulatively (Ajit Pandya et al, 2006). To prevent or retard (delay) the cataract, risk factors for lens damage should be minimized and biologic defense system should be maintained at optimal strengths.

MATERIALS AND METHODS

The lamp facilitates an examination of the anterior segment and posterior segment of the human eye, which includes the eyelid, sclera, conjunctiva, iris, natural crystalline lens, and cornea. The binocular slit-lamp examination provides a stereoscopic magnified view of the eye structures in detail cataractous patient is allowed to be seat in the examination chair with rest their chin and forehead on a support to steady the face. Using the biomicroscope, examine the patient's eye by the ophthalmologist or experienced optometrist. A fine strip of paper, stained with fluorescein, a fluorescent dye, may be touched to the side of the eye; this stains the tear film on the surface of the eye carefully to aid examination.

Slit lamp photography machine (E.-M. Meyer, 1976)

Patients will experience some photo sensitivity for sometime after this and may also cause increased pressure in the eye, leading to nausea and pain. Eyes were anaesthetized by giving local anesthesia, sterilized and cleaned properly. With fully dilated pupil, slit lamp photography of lenses was done (Muller O, 1976). For the same, slit lamp sections were recorded on video slit camera (Carl-ziss) (H. Littman, 1965). 8 X magnified print of the section were taken out on Sony – Polaroid printer. The lenses were removed by making an incision on the anterior pole of the eye ball. Maximum care was taken to minimize the damage to lenses. The lenses of cataractous human eyes were obtained during the extra capsular cataract surgery done in operation theatre at Nagari Eye Hospital, Ahmadabad by experienced ophthalmic surgeons as per Chylack classification (Chylack Jr et. al, 1993). The lenses thus obtained were processed and utilized with minimum delay for enzymatic and biochemical studies.

RESULTS AND DISCUSSION

The slit lamp photography was carried out before cataract operation shows following figure 1 to 8. The first photograph shows MATURE cataract having full opecification of lens. It looks white fibrous lens appearance.

The second photograph shows NS-PSC-CS type of mixed cataract with opecification in each regions of the lens. The third photograph shows NS-CS type of cataract.

The fourth photograph shows PSC-CS type of cataract which is less commonly found. The fifth photograph shows NS-PSC type of mixed cataract having noticeable change in colour.

The sixth photograph shows PSC cataract which is also less common type. The seventh photograph shows NS cataract which shows major opacity in nucleus and very commonly occurs in old people. The eighth photograph shows BROWN cataract which shows clear brown colour of the lens and fully blown cataract.

The inserted figure shows whole lens having different coloration as per types of cataracts. The types of cataract were judge by ophthalmologist and also compared with Chylack's classification.

[NS- Nuclear sclerosis, cs-cortical spoke, PSC-posterior capsular]

FIGURE-1 & 2

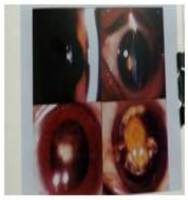

FIGURE-3 & 4

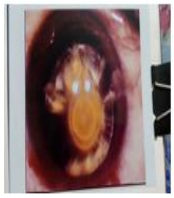

FIGURE-5 & 6

FIGURE-7 & 8

REFERENCES

1. Ajit Pandya and U.M. Rawal : Ascorbic acid and sulfhydryl groups in aqueous humour and different types of cataractous lenses, Journal of Cell and Tissue Research., 2006; 6-1.
2. Chatterjee, A., Miltonn, R.C. and Thyle, S. Prevalence and aetiology of cataract in Punjab. Br. J. Opthalmol., 1982; 66: 33.
3. E.-M. Meyer: Atlas of Slit Lamp Photography and Introduction to its Technical Problems, Stuttgart 1976.
4. Hiller, R., Sperduto, R.D. and Ederir, F.: Epidemiological association with cataract in 1972-2 national helath and nutrition examination survey. Am. J. Epidem., 1977; 105: 450-459.
5. Harding, J.J. "Cataract" Biochemistry, epidemiology and pharmacology. Pubi. Chapman an Hall London., 1991.
6. H. Littman: The New ZEISS Slit Lamp, ZEISS Information., 1965; 58.
7. Leo T. Chylack Jr; John K. Wolfe; David M. Singer; M. Cristina Leske; Mark A. Bullimore; Ian L. Bailey; Judith Friend; Daniel McCarthy; Suh-Yuh Wu, *Arch Ophthalmol.*, 1993; 111(6): 831-836
8. O. Müller: 10 SL, 30 SL, 75 SL in the ZEISS Tradition of Progress. A New Line of Slit Lamps, ZEISS Information., 1976; 85.
9. Pandya Ajit Insolubilization of lens proteins in normal and cataractous human eye, Bioscience Guardian, 2010; 1(2): 257-260.
10. Zigman, S. Detiles, M. and Torczynski, E. : sunlight and human cataracts. Inves. Opthal. Vis. Sci., 1979; 18: 462-67.