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Original Research Article

Donor and tissue profiling at the time of eye donation at a tertiary care hospital in western India

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ABSTRACT

Background: The purpose of this study was to analyse the donor and tissue profiling of eyes donated at a tertiary care center in western India.
Methods: Eye bank records were analysed for the period December 2014- December 2016. Variables studied included donor demographics (age, gender, ethnicity) cause of death of donor, consent for donation, whether the donation was voluntary or motivated, death to preservation interval, preservation to utilization interval, corneal suitability for transplantation and corneal tissue utilization.
Results: During this study period, 200 corneal tissues were retrieved from 100 donors (male: female= 33: 17). The mean age of donors was 63 years (range: 18-91 years). Most common age group of donors belonged to 70-79 year age group. Most of the donors belonged to the class III of socio-economic status (35%). The most common cause of death was cardiorespiratory arrest (63%). Majority donors were voluntary (71%). Most consent for eye donation was given by sons (51%) or daughters (17%). Most of the donations were done at the deceased houses (64%). Mean death to preservation interval was 2.8 hours. Total corneas suitable for transplantation were 43% out of which 20% were utilised with the most common cause for disuse being septicaemia (23%) and poor quality of tissue (57%). Majority of patients had comorbidities with hypertension being most common (76%).
Conclusions: With fairly less corneal tissue utilization, there is need for awareness among people in order to know the proper technique of preservation of eyes once death occurs and to increase motivational donations.

Keywords: Keratoplasty, Eye donation, Blindness

INTRODUCTION

The estimated blind people in India is expected to be around 12.2 million with vision ≤6/60 with corneal blindness comprising 1%.[1] With the great success of vision 2020 implemented by the health sector of India in collaboration with World health Organization the awareness of eye donation has increased considerably. A large proportion of the corneal blindness in the country is avoidable.[2] 50.7% of the general population were aware of "eye donation".[3,4] The eye bank where the study was conducted is one of the most prominent eye banks of western India. The aim of the study was to analyse the donor and tissue profiling of eyes donated at a tertiary care center in western India.

METHODS

A retrospective analysis of eye bank records was collected from the eye bank of our hospital Shri Gurugobind Singh Government hospital, Jamnagar from (December 2014-December 2016) in a two year period and analysed. The variables of donor included donor demographics (age, gender, ethnicity), socio economic

classification.[5] Cause of death of donor, consent for donation, whether the donation was voluntary or motivated, death to preservation interval, preservation to utilization interval, corneal suitability for transplantation and corneal tissue utilization.

Corneal buttons were collected and preserved at the site of excision and kept in tissue carrying boxes. All received corneal buttons were preserved in the refrigerator in the eye bank at 4^0 C.

The data obtained were collected, analysed, assessed and tabulated and was entered into an Excel spread sheet and then transferred to SPSS software (Statistical Package for Social Sciences, version 22, SPSS Inc, Chicago, IL, USA) for analysis.

RESULTS

During the 2 year study period, 200 corneal buttons were retrieved from 100 donors (male: female= 33: 17). Most of the donors belonged to the age group of 70-79 years comprising 26%, as depicted in Figure 1.

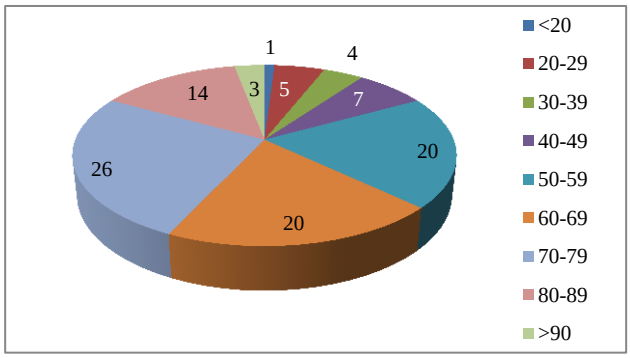

Figure 1: Age group division.

The mean donor age was 63 years (range 18-91 years). Most of the donors belonged to the class III of socio-economic status (35%). The most common cause of death was cardiorespiratory arrest (63%) followed by septicaemia comprising 23% followed by cerebro vascular accident comprising 5% as depicted in Figure 2.

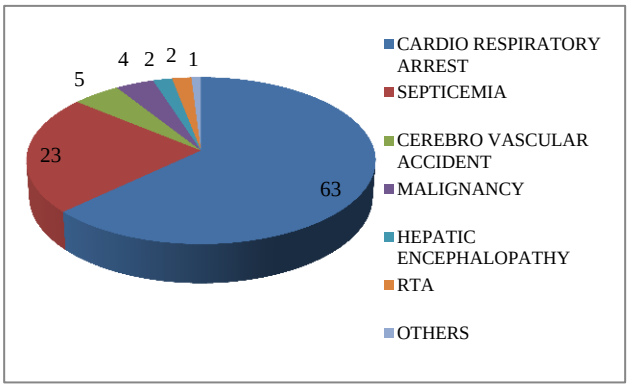

Figure 2: Cause of death.

Majority donors were voluntary (71%). Most consent for eye donation was given by sons (51%) followed by daughters (17%). Most of the donations were done at the deceased houses (64%) followed by hospitals at 32% as depicted in Table 3.

Table 1: Site of donation.

Site	Percentage (%)
Crematory ground	2
Morgue	2
Hospital	32
Home	64

76% of donors had associated co morbidities with hypertension being most common consisting of 46% followed by diabetes mellitus comprising 26% as depicted in Figure 3.

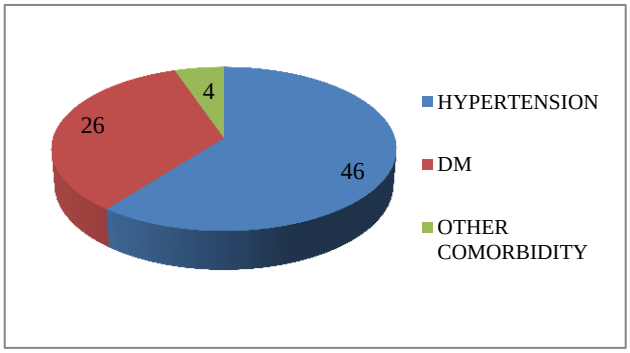

Figure 3: Associated comorbidities.

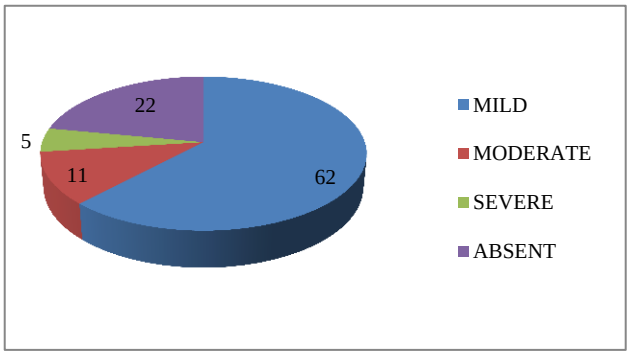

Figure 4: Condition of the eyeball (hypotony).

Mean death to preservation interval was 2.8 hours. The mean preservation to utilization ratio was 3.78 hours. Total corneas suitable for transplantation were 43% out of which 20% were utilised. On gross eye ball status, 62% had mild hypotony, 11% had moderate hypotony and 22% were normal as depicted in Figure 4.

49% of eyes had mild arcus senilis, 24% had thick arcus senilis and it was absent in 27% of the eyes. 20% of eyes had severe exposure keratitis and 38% had no exposure keratitis. On assessing the corneal degeneration, 76% had

no degeneration, followed by 23% having spheroidal degeneration as depicted in Table 2.

Table 2: Corneal degeneration.

Corneal degeneration	Percentage (%)
Absent	76
Spheroidal degeneration	23
Others	1

DISCUSSION

The most common age group was from 70-79 years. The most common cause of death was cardio respiratory failure (63%) followed by septicaemia (23%). Majority donors were motivated (n=320; 86%), and remaining (n=53; 14%) were voluntary.[6] Most donations were voluntary and conducted at homes of the donors. In contrast, Dosar et al have shown the majority collection from home deaths (75.2%) followed by hospitals (21.5%) and mortuary (3.3%).[7] Consent was mostly given by sons (51%) of the deceased followed by their daughters (17%). Death to preservation ratio was analysed and found that majority of tissues were retrieved within 6 hours of death. The mean death to preservation time was 2.8 hours which is far better than a study by Patel et al., who have shown this interval to be 15.2±6.2 hours.[8] The preservation to utilization ratio was 3.78 hours. We had collected 200 corneal tissues during the study period out of which 20% corneas were utilized with the most common cause for disuse being poor quality of tissues comprising 57% & septicaemia comprising of 23%. The reason for poor quality of tissues is the age of donors with the most common age group of donors being from 70-79 years. According to Patel et al, most common reason of non utilization of corneal tissue was biologic contamination (5%) followed by abnormal serology (3.9%) and failed endothelial assessment (2.6%).

The public awareness regarding eye donation is limited with majority being voluntary and few motivated donors. Considerable awareness with proper measures like grief counsellors can lead to rise in motivational donors among the younger age group thus leading to a rise in corneal tissue utilization. We conclude that there is need for increased awareness in order to augment motivational donors.

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