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Penetrating keratoplasty performed at ophthalmologic reference service review of results and complications

Ceratoplastias penetrantes realizadas em serviço oftalmológico de referência revisão dos resultados e complicações.

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Abstract

Objective: *To describe the epidemiological profile, complications and visual acuity improvement in patients submitted to penetrating keratoplasty in the Policlínica de Botafogo-RJ.* ***Methods:*** *Cross - sectional and retrospective study, carried out from January 2014 to April 2018, with review of 27 charts of patients submitted to transplantation.* ***Results:*** *Of the 27 patients evaluated, 15 (55.5%) were male and 12 (44.5%) were female. Mean age was 46.7 (DP 20.2). The indications for transplantation were corneal ulcer 6 (22.2%), keratoconus 5 (18.5%), bullous keratopathy 5 (18.5%), keratopathy in lane 2 (7.4%), leukoma 2 (7.4%), rejection, 2 (7.4%), primary failure 1 (3.7%), recurrence of infection 1 (3.7%), corneal ectasia after LASIK 1 (3.7%), descemetocele 1 (3.7%) and granular dystrophy 1 (3.7%). The main complications 4 (26.6%) were the occurrence of glaucoma and cataract. Regarding visual acuity, in the pre-transplant period 22 (81.5%) of the patients had the best corrected VA worse than or equal to 20/400.* ***Conclusion:*** *Studies of this nature allow us to improve surgical, postoperative follow-up and patient care.*

Keywords: *Corneal transplantation/epidemiology; Corneal transplantation/adverse effects; Health profile; Corneal diseases; Tissue transplantation; Corneal endothelium/pathology*

Resumo

Objetivo: Descrever o perfil epidemiológico, avaliar as complicações e a melhora da acuidade visual em pacientes submetidos a ceratoplastia penetrante na Policlínica de Botafogo-RJ. **Métodos:** Estudo transversal e retrospectivo, realizado no período de janeiro/2014 a abril/2018, com revisão de 27 prontuários de pacientes submetidos a transplante. **Resultado:** Dos 27 pacientes avaliados, 15 (55,5%) do sexo masculino e 12 (44,5%) eram do sexo feminino. A média de idade foi 46,7 (Dp 20,2). As indicações para realização de transplante foram úlcera de córnea 6 (22,2%), ceratocone 5 (18,5%), ceratopatia bolhosa 5 (18,5%), ceratopatia em faixa 2 (7,4%), leucoma 2 (7,4%), rejeição, 2 (7,4%), falência primária 1 (3,7%), recidiva da infecção 1 (3,7%), ectasia corneana pós LASIK 1 (3,7%), descemetocele 1 (3,7%) e distrofia granular 1 (3,7%). As principais complicações 4 (26,6%) foram a ocorrência de glaucoma e catarata. Em relação a acuidade visual, no período pré transplante 22 (81.5%) dos pacientes apresentavam a melhor AV corrigida pior ou igual a 20/400. No pós-operatório apenas 9 (33.3%) se mantiveram com a melhor AV corrigida pior ou igual a 20/400. **Conclusão:** Estudos dessa natureza nos permite o aprimoramento cirúrgico, acompanhamento pós-operatório e cuidado com os pacientes.

Descritores: Transplante de córnea/epidemiologia; Transplante de córnea/efeitos adversos; Perfil de saúde; Doenças da córnea Transplante de tecidos; Endotélio da córnea/patologia

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Introduction

Corneal diseases affect young and active population leading to significant economic and social loss. They are the second cause of reversible blindness in the world.[1,2]

It is interesting to note that in the last eight years, from 2010 to 2017, the effective donor rate grew 69%. Among the transplants, cornea is the most frequent one due to the technical facilities and the number of organs donated. In 2017, there were 15,242 corneal transplants in Brazil. The state of São Paulo had the highest incidence with 4,462 cases, whereas in the state of Rio de Janeiro 965 transplants occurred, being the 5th state in number of procedures.[3,4]

The indications for penetrating keratoplasty in Brazil vary in different regions of the country. Keratoconus is the main indication in São Paulo. However, the most frequent indication in Sergipe is related to bullous keratopathy, with keratoconus being in 3rd place in frequency.[4,5]

The objective of the present study is to analyze the profile of patients who underwent corneal transplants at the Ophtalmology Service of Policlínica de Botafogo, as well as secondary complications, and to evaluate the impact on visual acuity (VA) and consequently the quality of life of these patients.

Methods

The study was cross-sectional and retrospective including 27 patients who underwent corneal transplant at the Ophtalmology Service of Policlínica de Botafogo from January 2014 to April 2018. In the present study, there will be a comparison of visual acuity before and after transplant, which is why we selected only surgeries performed by the same surgeon.

The data was obtained by means of a medical record review. Patients who presented incomplete data in the medical record were excluded from the study.

Among the variables studied are age, gender, diagnosis, visual acuity before transplant, visual acuity after transplant, and complications secondary to the procedure.

For the descriptive analysis, a simple prevalence type frequency measure was used, besides the use of measures of central tendency and dispersion. For the comparative analysis, the Student's t test was used for numerical variables, and the chi-square test for categorical variables, with a significance level of 95% (p value <0.05).

Results

Of the 27 patients evaluated, 15 (55.5%) were male and 12 (44.5%) were female. The average age was 46.7 (SD 20.2).

The indications for transplant were corneal ulcer 6 (22.2%), keratoconus 5 (18.5%), bullous keratopathy 5 (18.5%), keratopathy in lane 2 (7.4%), leukoma 2 (7.4%), rejection 2 (7.4%), primary failure 1 (3.7%), recurrence of infection 1 (3.7%), corneal ectasia after LASIK 1 (3.7%), descemetocele 1 (3.7%), and granular dystrophy 1 (3.7%).

Of the patients who underwent corneal transplant, 15 (55.5%) presented secondary complications, being 4 (26.6%) cataract, 4 (26.6%) glaucoma, 3 (20%) retinal detachment, 1 (6.6%) Urrets-Zavalia syndrome, 1 (6.6%) rejection, 1 (6.6%) recurrence of infection, 1 (6.6%) primary failure, and 1 (6.6%) hypertensive retinopathy.

Regarding visual acuity in the pre-transplant period, 22 (81.5%) patients had the best corrected VA worse than or equal to 20/400. In the postoperative period, only 9 (33.3%) remained with the best corrected VA worse than or equal to 20/400, that is, 59% of patients presented improved vision. Of the transplanted patients with the best corrected VA, 13 (48.14%) presented normal vision, and 5 (18.5%) had low vision according to the ICD-9-CM classification criteria (WHO/ICO).

Discussion

The present study presents data similar to the literature with regard to gender, where Calix Netto et al. and Araújo AA et al. also found a prevalence of male cases. The highest prevalence occurred in male patients, a category traditionally related to increased exposure to trauma.[5,6]

Regarding the age group, Calix Netto et. Al. Identified an average of 37 years (ranging from 3 to 87 years), whereas Araújo AA et al. identified that patients with bullous keratopathy had an average of 68.54 ± 10 years, patients with keratoconus 23.66 ± 12.9 years, whereas patients with other indications had intermediate ages.[5,6]

Regarding the indications, although keratoconus was the first place in most of the reference centers, it was in 2nd place in our service. We believe that this reflects their profile, which is considered the private ophthalmological emergency of the state of Rio de Janeiro with an average treatment rate of 1000 patients/week.

Regarding complications in the postoperative period, Endriss et al. Identified that the incidence of glaucoma was 31.7%, rejection 24.4%, failure 22%, infection recurrence 6.3%, retinal detachment 2.9%, and cataract 2.9%.[7]

Infectious keratitis is an uncommon and serious complication of penetrating keratoplasty. In the present study, postoperative infection of the corneal button increased in comparison to the literature describing variations from 1.76 to 4.9%.[8] Depending on the series analyzed, the corneal graft rejection rate varies from 3.5 to 6.5% according to the vascularization of the recipient cornea.[9] In the preoperative phase, the reduction of the antigenic difference between donor and recipient is desired, in addition to the reduction of the antigenic load transported to the recipient during the surgery. In the intraoperative phase, the prevention occurs with meticulous surgical technique and good centralization of the graft. Finally, in the postoperative period, prevention is achieved by controlling the immune response of the recipient.

The outcome of corneal transplant is directly dependent on the follow-up of patients. Adequate use of corticosteroids and other immunosuppressants, adequate removal of sutures, accessibility of the patient to the physician and the transplant center are important factors for the success of the transplant.[10]

The prognosis of corneal transplants is multifactorial in nature; despite the evident progress, the postoperative evolution of penetrating keratoplasty depends on prognostic factors related to the clinical condition of the ocular disease motivating the surgical indication.[11-12] Understanding these factors is essential to minimize the failure rates, promoting better functional visual outcome to patients. [13]

Conclusion

Studies like the present one allow us to know the epidemiological profile of the service, as well as the main related complications. It also allows us to offer better medical care

to patients, and identify the nature of the failures, learn from them, correct them, and add values and criticisms for continuous improvement during the process.

References

1. Almeida, HG. Souza, ACD. Perfil epidemiológico de pacientes na fila de transplante de córnea no estado de Pernambuco – Brasil. Res Bras Oftalmol 2014;73(1):28-32.
2. Adán CBD, Diniz AR, Sato EH. [Ten years of corneal donation to the Hospital São Paulo Eye Bank: characteristics of corneal donors from 1996 to 2005]. Arq Bras Oftalmol. 2008; 71(2):176- 81. Portuguese.
3. Registro Brasileiro em Transplantes Estatística de Transplantes [Internet]. [citado 2018 Out 26]. Disponível em: www.abto.org.br/abtov03/default.aspx?mn=457&c=900&s=0
4. Flores VG, Dias HL, Castro RS. [Penetrating keratoplasty indications in "Hospital de Clínicas – UNICAMP"]. Arq Bras Oftalmol. 2007; 70(3): 05-8. Portuguese.
5. Araújo AA, Melo GB, Silva RL, Araújo Neta VM. [Epidemiological Profile of the patients on the waiting list for cornea transplantation in the State of Sergipe, Brasil]. Arq Bras Oftalmol. 2004;67(4):613-6. Portuguese.
6. Calix Netto MJ, Giustina ED, Ramos ZG, Peccini RFC, Sobrinho M, Souza LB. Principais indicações de transplante penetrante de córnea em um serviço de referencia no interior de São Paulo (Sorocaba – SP, Brasil). Arq Bras Oftalmol. 2006;69(5):661-4.
7. Endriss D, Cunha f, Ribeiro MP, Toscano J. Ceratoplastias Penetrantes Realizadas na fundação Altino Ventura: revisão dos resultados e complicações. Arq Bras Oftalmol. 2003;66 (3):273-7.
8. Santos NC, Sucomine PT, Souza LB, Sato EH, Freitas D. Ceratite infecciosa pós transplante de córnea. Arq Bras Oftalmol. 1999;62(1):48-53.
9. Teixeira MF, Almeida Jr GC, Rodrigues NL, Kamimoto PS, Kashiwabuchi LK. Resultados e indicações de ceratoplastias penetrantes realizadas por médicos em treinamento, num país em desenvolvimento. Arq Bras Oftalmol. 2001; 64: 557-61.
10. Costa DC, Kara-Jose, N. Rejeição de transplante de córnea. Rev Bras Oftalmol. 2008;67(5):255-63.
11. O'Day DG. Glaucoma after penetrating keratoplasty. In: Krachmer JH, Mannis MJ, Holland EJ, editors. Cornea: Surgery of the cornea and conjunctiva. St Louis: Mosby; 1997. p. 1719-30.
12. Chalita MRC, Diazgranados EBM, Sato EH, Branco BC, Freitas D. Rejeição corneana pós transplante de córnea: análise de dados do Banco de Olhos do Hospital São Paulo – Escola Paulista de Medicina. Arq Bras Oftalmol. 2000; 63(1): 55-8.
13. Vail A, Gore SM, Bradley BA, Easty DL, Rogers CA, Armitage WJ. Conclusions of the corneal transplant follow up study. Collaborating Surgeons. Br J Ophtalmol. 1997; 81: 631-6.

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