OPHTHALMIC CONSULTATIONS AT A LEVEL II TRAUMA CENTER IN 2020: LANKENAU MEDICAL CENTER

Gabriella Mamo, OMS-3[1], Sarah Bonaffini, DO[2], Raul Hernandez Rubio, DO[2], Kenneth Heist, DO[2], Harrison Bannett, DO[2], Sufyan Ahmad, OMS-3[1], Peter Maduka, OMS-3[3], Jacqueline Carrasco, MD[4]

1. Philadelphia College of Osteopathic Medicine, Medical Student, Philadelphia, PA.
2. Philadelphia College of Osteopathic Medicine, Department of Ophthalmology, Philadelphia, PA.
3. Rowan University School of Osteopathic Medicine, Medical Student, Stratford, NJ.
4. Lankenau Medical Center, Department of Ophthalmology, Philadelphia, PA.

Abstract

Introduction: Both the variety and quantity of ophthalmology consultations performed during residency are not only crucial to its accreditation, but are also a key component in the quality of a resident's post-graduate training. Examining the most common consultations of a program is useful for delegating resources, preparing trainees for clinical care, and proactively anticipating the needs of a patient population, thus resulting in optimization of patient care.

Methods: A hospital-based retrospective chart review of patients evaluated by the PCOM ophthalmology residency consultation service at Lankenau Medical Center from January through October 2020 was conducted. The chief complaint, date of consultation, and whether the patient was in the inpatient, outpatient, or emergency setting was documented. The reasons for consultation were grouped into several categories, including infectious causes, orbital trauma, pupillary defects, visual acuity or field defects, arterial causes, etc. These data were then analysed and compared.

Results: There was a total of 174 patients in the study (22.41% males, 18.39% females, 59.20% no data), consisting of 122 inpatients, 17 outpatients, and 35 Emergency Room consults. The most common consultation was decreased vision/ vision loss (37.93%), of which 69.69% were inpatient, 9.78% were outpatient, and 20.12% were ER consults. The second most common consult included orbital fracture or globe injury (23.56%), followed by infectious causes (i.e., conjunctivitis, HSV, VZV, etc.) with 13.21%.

Conclusion: The PCOM ophthalmology consultants at Lankenau Medical Center are exposed to a wide gamut of ocular pathology. This wide exposure is useful and essential in preparing trainees for both in-hospital, ER, and outpatient care. The most common ophthalmologic complaint requiring consultation in 2020 included decreased vision and acute vision loss, both in the trauma and non-trauma setting. Many consultations are more suitable for outpatient evaluation which can help optimize care efficiently.

Introduction

During the COVID-19 pandemic, as many elective procedures and non-emergent office visits were deferred, the case volume seen by many ophthalmologists was drastically impacted [1]. These changes are consequential because the variety and quantity of consultations performed during residency are not only crucial to its accreditation but are also a key component in the quality of a resident's post-graduate training.

A study conducted by the Department of Ophthalmology at the University of Illinois found that complaints related to visual changes were the leading reason for ophthalmic consults [2]. However, another similar study conducted at the Kings County Hospital Center, a large public hospital in Brooklyn, New York showed that traumatic eye injuries were the leading consult at that institution [3]. Although not clearly delineated, one can hypothesize that the variations in these results could likely be attributed to each institutions' unique consultation patterns which are influenced by geography, population, and other factors. Hence, the need to understand the consult trends in each individual institutions' ophthalmology department has ramifications that affect both patients, physicians, and health care management.

This is further supported by a large study done in the U.S. by the Nationwide Emergency Department Sample and a similar study at Ohud Hospital, Madinah, Saudi Arabia [4, 5]. These studies revealed that to optimize cost and clinical outcomes, the importance of ophthalmic epidemiology cannot be overstated, hence, information on the most common consults a residency program is exposed to can be useful in delegating resources, preparing trainees for clinical care, proactively anticipating the needs of a patient population, and optimizing care [4, 5].

Methods

A hospital-based retrospective chart review of patients evaluated by the PCOM ophthalmology residency program consultation service at Lankenau Medical Center from January through October 2020 was conducted. The chief complaint, date of consultation, type of encounter (whether the patient was in the inpatient, outpatient, or in the emergency setting), reason for consultation, and gender were documented. Patients were kept anonymous and were given identification numbers. Reasons for consultation were grouped into several categories, such as infectious causes, foreign body, retinal detachment, scleral/corneal/conjunctival damage, uveitis, fracture, orbital trauma, pupillary defects, visual acuity or field defects, and arterial causes. If the reason for consultation was unclear or nonspecific, they were grouped separately. Some consultations belonged to more than one category. The total number of consultations in each category were added up in order to determine the single most common reasons or consultation. The percentage of patients who were male vs. female as well as type of hospital setting of these patients were also calculated within each major category. These data were then analyzed and subsequently compared.

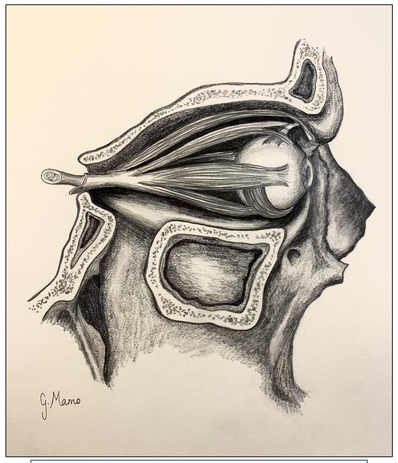
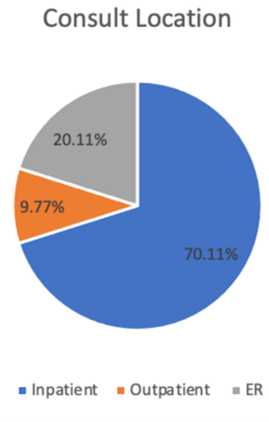


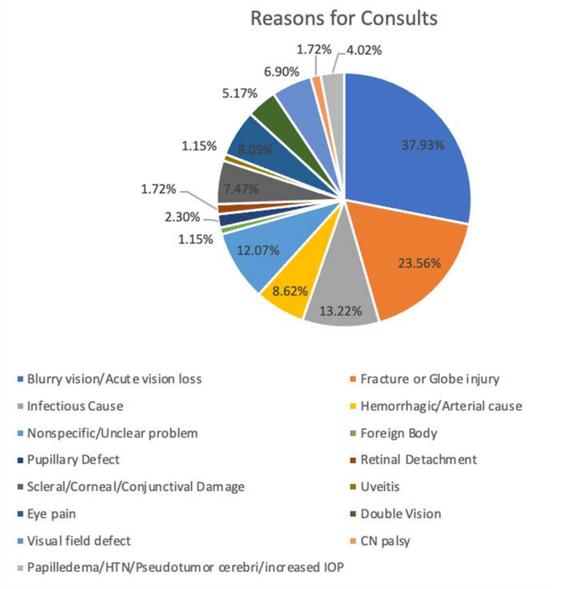
Figure 1: Original medical illustration of the orbit by Gabriella Mamo.

Results

In this study, there were a total of 174 patients (22.41% males, 18.39% females, 59.20% no data) who were consulted by the PCOM ophthalmology residency program. These consisted of 122 inpatients (70.11%), 17 outpatients (9.77%), and 35 patients in the Emergency Room setting (20.11%). 29 patients were excluded from this study due to insufficient data on the reason for consultation.

The most common reason for consultation in 2020 was blurry vision and acute vision loss (37.93%). Of these, 69.69% were inpatient, 9.78% were outpatient, and 20.12% were Emergency Room consults. The second most common reason was orbital fracture or globe injury (23.56%). More males (12) than females (8) had orbital trauma or globe injuries (21 patients with no data). Patients consulted for "orbital fracture or globe injury" were categorized into sub-groups. The three most common sub-groups in this category were unspecified trauma (24 patients), orbital wall fracture (5 patients), and orbital floor trauma (4 patients). Lesser common reasons included air present in the globe, increased intraocular pressure, periorbital hematoma, globe rupture, orbital roof fracture, and proptosis/exophthalmos. 13.21% of the consultations in this study were due to infectious causes, such as conjunctivitis or herpes zoster ophthalmicus. Most of these top three consultations occurred during January 2020 (43.48%). Additionally, hemorrhagic or arterial causes comprised of 8.62% of the total number of patients. Categories that contained the least common number of consults included foreign body (1.15%), retinal detachment (1.72%), uveitis (1.15%), and cranial nerve palsy (1.72%). 21 patients (12.06%) were consulted for nonspecific or unclear issues.





Discussion

The PCOM Ophthalmology residents at Lankenau Medical Center see patients with a wide variety of ocular symptoms and diseases. This exposure ensures that physicians in training are prepared for inpatient, outpatient, and ER levels of care. The most common ophthalmologic complaints requiring consultations in 2020 included blurry vision and acute vision loss, both in the trauma and non-trauma setting. One potential explanation for this is the COVID-19 pandemic, which has been shown to cause various ocular symptoms that contribute to blurry vision. Chemosis, conjunctivitis, and epiphora have also been described in patients infected with COVID-19 [7]. Furthermore, those with ocular symptoms of COVID-19 also had higher amounts of inflammatory markers in their serum (i.e. CRP, LDH, and WBC counts) [6]. The third most common reason for consultation was an infectious cause, such as conjunctivitis or herpes zoster ophthalmicus. Perhaps the virus is able to cause immune dysregulation, weakening the body's overall defenses, thus making individuals more prone to these other infections. Conversely, quarantine has led to less exposure to infected individuals. Additionally, hand hygiene has been an encouraged behavior during the pandemic, limiting the spread of both viruses and bacteria. Both of these points argue against this potential correlation. Arterial and hemorrhagic causes were the fourth most common reason for consultation. Hematologic abnormalities have been noted in patients infected with COVID-19. COVID patients have also been shown to have retinal changes, such as retinal hemorrhages, cotton wool spots, tortuous and dilated veins. Interestingly, the diameter of retinal veins in these patients was associated with disease severity [8]. However, without a comparison study prior to the COVID-19 pandemic it is difficult to deduce if this data is correlative. The data obtained from our study warrants future research to evaluate if there is a true correlation between the most common ophthalmic consultations of 2020 at Lankenau Medical Center and the COVID-19 pandemic.

Conclusions

In conclusion, it is useful to be aware that the most common ophthalmologic complaint requiring consultation in 2020 was blurry vision and acute vision loss. This information is helpful for physicians in various inpatient, outpatient, and emergency settings to be prepared and have the appropriate screening tools in order to evaluate patients as efficiently as possible. Having the knowledge of the most common consultation that a residency program faces can help to guide resident didactic education so that they can become more prepared for these encounters, particularly for new residents. It may also be beneficial in order to have the necessary supplies available so that the patients can receive treatment as fast and efficiently as possible. Alternatively, knowing the least common consultations in a program can help to determine the diagnoses and procedures to which residents may need more exposure. Consults related to foreign bodies, cranial nerve palsies, retinal detachment, and uveitis were among the fewest seen by our program. This may suggest that there is room for improvement in these areas and a possible need to add a clinical site that witnesses more of these cases. Ultimately, this will help to train more well-rounded physicians.

Contact

Gabriella Mamo, Sarah Bonaffini, DO
Philadelphia College of Osteopathic Medicine
Email: gm270930@pcom.edu

References

1. El Hamichi, S., Gold, A., Heier, J., Kiss, S., & Murray, T. G. (2020). Impact of the COVID-19 Pandemic on Essential Vitreoretinal Care with Three Epicenters in the United States. Clinical ophthalmology (Auckland, N.Z.), 14, 2593–2598. https://doi.org/10.2147/OPTH.S267950
2. Oh, D. J., Kanu, L. N., Chen, J. L., Aref, A. A., Mieler, W. F., & MacIntosh, P. W. (2019). Inpatient and Emergency Room Ophthalmology Consultations at a Tertiary Care Center. Journal of ophthalmology, 2019, 7807391. https://doi.org/10.1155/2019/7807391
3. Rizzuti, A. E., Vastardi, M., Hajee, M., & Lazzaro, D. R. (2013). Scope of resident ophthalmology consultation service and patient follow-up rates at a level 1 trauma center in Brooklyn, New York. Clinical ophthalmology (Auckland, N.Z.), 7, 643–647. https://doi.org/10.2147/OPTH.S43345
4. Channa R, Zafar SN, Canner JK, Haring RS, Schneider EB, Friedman DS. Epidemiology of Eye-Related Emergency Department Visits. JAMA Ophthalmol. 2016;134(3):312-319. doi:10.1001/jamaophthalmol.2015.5778
5. Alabbasi OM, Al-Barry M, Albasri RF, et al. Patterns of ophthalmic emergencies presenting to a referral hospital in Medina City, Saudi Arabia. Saudi J Ophthalmol. 2017;31(4):243-246. doi:10.1016/j.sjopt.2016.03.001
6. Wu P, Duan F, Luo C, et al. Characteristics of Ocular Findings of Patients With Coronavirus Disease 2019 (COVID-19) in Hubei Province, China. JAMA Ophthalmol. 2020;138(5):575–578. doi:10.1001/jamaophthalmol.2020.1291
7. Bressler NM. Ophthalmology and COVID-19. JAMA. 2020;324(12):1143–1144. doi:10.1001/jama.2020.17595
8. Invernizzi, A., Torre, A., Parrulli, S., Zicarelli, F., Schiuma, M., & Colombo, V. et al. (2020). Retinal findings in patients with COVID-19: Results from the SERPICO-19 study. Eclinicalmedicine, 27, 100550. doi: 10.1016/j.eclinm.2020.100550