Perception of corneal abrasión management and diagnosis in primary care

Percepción del manejo y diagnóstico de la abrasión corneal en atención primaria

Authors
Dr. Valeria Monserrath Zúñiga Sánchez.
Professor of Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: ua.valeriazuniga@uniandes.edu.ec
https://orcid.org/0000-0002-6765-0660
Dr. Iván Pimienta Concepción.
Professor of Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: ua.ivanpimienta@uniandes.edu.ec
https://orcid.org/0000-0002-7623-7499
Dr. Siguencia Muñoz Jhonatan Miguel.
Professor of Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: ua. jhonatansiguencia@uniandes.edu.ec
https://orcid.org/0000-0002-4066-2813

Abstract

Introduction: A painful and frequent ocular injury is a corneal abrasion. Unfortunately, there is no consensus on its management.
Objective: To determine the knowledge, practice and resources available to primary care physicians to diagnose and manage corneal abrasion.
Methods: A cross-sectional survey study was conducted in 2020-2021 in primary care practices.
Results: Excellent + good practice grade for managing corneal abrasion was reported at 50/235 = 21.2 % (95 % CI: 16.0, 26.5).
Conclusions: This survey highlighted physicians' low level of knowledge and practice in managing corneal abrasion.

Keywords: corneal abrasion, knowledge, primary care, general practice, source: DeCS
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Resumen

Introducción: Una lesión ocular terriblemente dolorosa y frecuente es la abrasión de la córnea. Desafortunadamente, no hay consenso en su manejo.
Objetivo: determinar el conocimiento, la práctica y los recursos disponibles para los médicos de atención primaria para diagnosticar y manejar la abrasión corneal.
Método: Se realizó un estudio trasversal a través de un encuesta que se llevó a cabo en 2020-2021 en las prácticas de atención primaria.
Resultados: Se informó un grado de práctica excelente + bueno para manejar la abrasión corneal en 50/235 = 21,2 % (IC del 95 %: 16,0; 26,5).
Conclusiones: Esta encuesta destacó el bajo nivel de conocimiento y práctica entre los médicos para manejar la abrasión corneal.
Palabras Clave:abrasión corneal,conocimiento, atenciónprimaria, medicina general, fuente:DeCS

Introduction

A painful and common eye injury is a corneal abrasion. If it is minor, healthy corneal cells

quickly fill the defect and prevent complications such as infection and secondary vision damage. However, if it affects deeper corneal tissue, the patient may need active intervention and healing may take 1 to 2 days[1]. It was reported that more than a quarter of eye emergencies at a tertiary eye hospital were diagnosed with corneal abrasion. Overall, in hospitals in developing countries, one in eight eye emergencies was related to corneal abrasion[2]. Therefore, physicians in an emergency department should be familiar with the diagnosis and management of corneal abrasion. This association of American family physicians recommended this protocol, and special emphasis is placed on training family physicians in the U.S. to diagnose and treat corneal abrasion[3]. Unfortunately, emergency physicians have no consensus on the management of corneal abrasions. Protocols for primary care physicians were proposed, but it is unclear whether these protocols are followed[4].

To our knowledge, primary eye care services are not yet fully integrated into the primary health care system, resulting in excessive referrals to secondary care systems or eye specialists. Based on this potential gap in services, we believe that a study to determine the available resources and the primary care physician's perception of the diagnosis and management of corneal abrasion would provide important basic information on the approach to the treatment of this common disorder.

The results of a survey of emergency physicians and family practitioners working in primary health care institutionswere presented, except in ophthalmology units, focusing on resources, knowledge and practice for diagnosing and managing corneal abrasion.

Method

A cross-sectional survey study was conducted in 2020-2021 in primary care practices in the city of Ambato. The survey form was tested before inviting participants. The form was modified based on the clarity of the questions and the options to mark according to the pilot participant's comments. This study was approved by the Universidad Regional Autónoma de Los Andes (UNIANDES).

To achieve a 95% confidence interval (CI), an acceptable margin of error of 5%, and a clustering effect of 1.2, we need to interview at least 237 participants.

Demographic information included where the physician worked, type of job responsibility, ophthalmic patient workload, and the general patients for whom they provide care. Resources available for diagnosis at their workplace included slit lamp biomicroscope and their practice of using this tool for corneal abrasion diagnosis. There were two questions about diagnosis, five questions about treatment, and two about follow-up regimens for managing corneal abrasion cases. The participant had to select one of the multiple options for each question.

The survey completed by the participant was transferred to a spreadsheet. The participant's answers were compared with the correct answers of three predetermined experts. For each correct response, a score of +1 was assigned and for each incorrect response, a score of -1 was awarded. In addition, each participant's score for diagnosis, treatment, and follow-up protocol was summarized and the overall score for all participants was estimated. The physicians' level was considered excellent if the score was greater than 75%. If it was 51% to 75%, we defined it as good. Scores of 26% to 50% were considered poor and scores of 25% or less were defined as inferior practices for corneal abrasion management.

The database and statistical processing of the data were performed and analyzed in the SPSS 26 statistical program (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used for the results collection, presentation and interpretation. For qualitative variables, we present them as frequencies and percentage proportions. To compare survey results in subgroups, we calculated the relative risk, its 95 % CI, and the bilateral p-value. $P < 0.05$ was considered statistically significant.

Results

235 participants responded to the survey. The proportion of participants by type of

work in the study was adequate for international comparison.

A quarter of the attending physicians were overloaded with general patients. Exposure to ophthalmology patients in two-thirds of the participants was too low (93; 39.6%). Resources for corneal abrasion diagnosis were available in limited centers (51; 21.7%).

The level of practice of emergency physicians in managing corneal abrasion was compared with the standard recommended by corneal surgeons. A grade of excellent + good practice for managing corneal abrasion was reported at 50/235 = 21.2 % (95 % CI: 16.0, 26.5).

Variation in practice in managing corneal abrasion by physician type (P< 0.001) and region where they work was significant (P < 0.001). Certified emergency physicians had better practices for managing corneal abrasion compared with others. However, certified family physicians were not. However, workplace (P = 0.7) and slit lamp availability (P = 0.2) were not significantly associated with the level of practice in managing corneal abrasion.

Four out of ten participants considered fluorescein staining and the use of cobalt blue light to be essential for diagnosing corneal abrasion. Less than half of the participants felt that antibiotics and lubricants should be used to treat corneal abrasion. About 27.2% of participants suggested urgent referral to an ophthalmologist. The use of specific antibiotics varied widely; however, ofloxacin was the primary choice. Almost a quarter of the participants were unsure about the protocol for referral and follow-up of a corneal abrasion case.

Table 1. Diagnostic and treatment practice for corneal abrasion by primary care physicians.

Feature	N (%)
Diagnosis of corneal abrasion (n =188)	
visual examination	33 (14,0)
Fluoresceinbutwithout light.	10 (4,3)
Fluorescein and regular light	26 (11,1)
Fluorescein and blue light	94 (40,0)
Calltheophthalmologist	25 (10,6)
Treatmentstrategy	
No treatment and warranty	16 (6,8)
Topicalantibiotic and lubricant.	105 (44,7)
Topicalantibioticsonly	38 (16,2)
lubricantonly	12 (5.1)
Urgent referral to an ophthalmologist	64 (27,2)
Antibioticofchoice	
ofloxacin	94 (40,0)
moxifloxacin	17 (7,2)
gentamicin	31 (13,2)
Ciprofloxacin	34 (14,5)
chloramphenicol	39 (16,6)
Erythromycin	9 (3,8)
Fucithalmic	5 (2.1)
tobramycin	1 (0,4)
None	5 (2.1)
Use ofcycloplegic	
Yes	45 (19,1)
No	124 (52,8)
I am notsure	66 (28,1)
Wearbandagecontactlenses	
Yes	50 (21,3)

No	185 (78,7)
painmanagement	
Anesthetic/topicalanalgesic	98 (41,7)
Oral analgesic	116 (49,4)
None	21 (8,9)
Eyepatch(n = 233)	
Never	127 (54,5)
Always	66 (28,3)
In someindication	40 (17,2)
When is the next follow-up	
After 24 hours	59 (25,1)
2-3 days	45 (19,1)
No follow-up required	12 (5.1)
Refertoophthalmologist	119 (50,6)
Follow-up by ophthalmologist (n =233)	
1-2 days	151 (64,3)
1-2 weeks	39 (16,6)
4-6 months	43 (18,3)
Emergencyfollow-up	0

Source: statisticalanalysis, $p \leq 0.05$

Discussion

In this study, we noted a low level of awareness and resources for corneal abrasion management among physicians working at the primary ophthalmic care level, either in primary health care centers or hospital emergency units. On the other hand, board-certified emergency physicians and physicians working in the central and western parts of the city were more knowledgeable about corneal abrasion management. In addition, standard operating procedures and resources for diagnosing and managing corneal abrasion are not uniform in all parts of Ecuador.

The anonymity of personal identity in this survey allowed participants to provide candid opinions without fear of being punished for poor performance or rewarded for favorable responses. As a result, the data would allow decision-makers to improve eye care for patients with corneal abrasion brought to the primary level as an emergency and also guide medical educators to focus on weak areas of emergency medical care in Ecuador.

To diagnose corneal abrasion, magnification, fluorescein staining of the corneal epithelium and visualization of the defect with blue light are preferred[5,6]. The blue light source could be after using a cobalt blue filter or a wood lamp. Our study's low awareness of the diagnostic method could be attributed toa lack of resources and failure to train physicians in standard eye care[7,8].

The standard protocol for treating corneal abrasion varies according to the cause, depth of injury, presence of a corneal foreign body, and available resources, especially topical antibiotics available at the primary ophthalmic care level[9,10]. Even in industrialized countries, there is a lack of consensus onmanaging corneal abrasion in an emergency[11,12]. Management also varied, but all three methods, such as bandage contact lens wear, antibiotic ointment application or pressure patching, were equally effective in epithelializing the abrasion[13,14].

In the study, one-quarter of the participants were certified emergency physicians;in contrast, a study in Canada had three-quarters of the participants who were board-certified emergency physicians[15]. In the study, 27% of physicians preferred to seek an ophthalmologist's assistance in managing corneal abrasion. In contrast, Canadian emergency physicians preferred first aid and then 88% of cases to ophthalmologists for follow-up, which implies that as the number of certified emergency physicians in Ecuador increases, corneal trauma care will improve. Those in the central and western parts of the

city had better knowledge about corneal abrasion management. This could be better exposure of these physicians to ophthalmic practice under the supervision of eye health professionals [16,17].

In Australia, standard operating procedures for managing corneal abrasion in a hospital emergency unit were recommended[18]. Corneal subspecialists could play an important role in training primary eye care physicians, thereby strengthening eye care at the primary level and evaluating the impact of such a policy change in the coming years [19,20].

The survey may not represent all physicians who manage corneal abrasions in Ecuador. Therefore, extrapolation of the survey results should be made with caution. An objective assessment of practice in managing corneal abrasion or an audit of corneal abrasion cases referred to ophthalmologic services might be a better benchmark to study the level of knowledge and practice of physicians.

Conclusions

This survey highlighted physicians' low level of knowledge and practice in managing corneal abrasion and perhaps other ocular emergencies in Ecuador. Therefore, there is an urgent need to integrate primary ophthalmology care into emergency services by providing the necessary resources and training physicians in standard operating procedures for ocular emergencies. Not only will this reduce the workload on ophthalmology services, but patients will receive urgent and appropriate care in hospitals without ophthalmology services.

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