Commentary

Fusarium spp. Involvement in Microbial Keratitis

Francesco Nicoldi* and Jordan Randall

Mountain Province State College, United Kingdom

*Corresponding Author**
Francesco Nicoldi
Mountain Province State College,
United Kingdom
E-mail: ruthc@gmail.com

Received date: 07-January-2023, Manuscript No: JPHC-23-92133; **Editor assigned:** 10- February-2023, PreQC No. JPHC-23-92133(PQ); **Reviewed:** 24- February-2023, QC No. JPHC-23-92133(Q); **Revised date**: 25-February-2023, Manuscript No: JPHC-23-92133(R); **Published date:** 28-February-2023, DOI: 10.35248/2376-0389.23.13.2.490

Abstract

Members of the filamentous fungal genus Fusarium are among the most common agents responsible for keratomycosis in humans. Fusarium keratitis is most common among agricultural workers in hot, humid, tropical or semi-tropical climates, but it can occur more rarely in temperate climates, such as Hungary. Keratitis is typically treated with a topical antifungal agent, sometimes in conjunction with subconjunctival injections and/or antimycotic agents; however, therapeutic keratoplasty may be required in patients whose corneal infection does not resolve. Early and accurate diagnosis, combined with appropriate antifungal therapy, is critical for increasing the likelihood of complete recovery.

Keywords: Endophthalmitis, Fusarium spp, Keratomycosis, Covid-19

Introduction

Keratomycosis is a chronic, suppurative, ulcerative corneal disease [1]. Exogenous infection occurs when an organism enters the corneal epithelium. *Fusarium* and *Aspergillus* spp. are the most common filamentous fungi involved in mycotic keratitis. *Fusarium* spp. are commonly found in soil, marine or river environments, and on plants all over the world. Some species are plant pathogens, while others are saprophytes in the soil [2]. However, they have been reported as aetiological agents in opportunistic infections with increasing frequency in recent years [3]. Fusariosis is most commonly seen represent true cognitive impairment. The lack of data on pre-existing cognitive disorders and delirium during the COVID-19 illness may have confounded the observed associations. Because only a few patients required ICU admission or intubation, the findings may not be applicable to the most severe cases of COVID-19.

To better characterize the predictors, duration, and consequences of COVID-related cognitive symptoms, larger prospective studies with repeated assessments and longer follow-ups are required. Our findings contribute to the growing body of knowledge about COVID-19's long-term neurocognitive and neuropsychiatric effects. While our prevalence estimates should be interpreted with caution due to the convenience of our sample, the high frequency of cognitive and psychological symptoms observed months after non-critical COVID-19 illness emphasize the importance of comprehensive neurocognitive testing and depression/PTSD screening as part of standard post-COVID care [3]. Furthermore, the strong link between depression and COVID-induced PTSD and cognitive symptoms suggests that better detection and treatment of such psychological symptoms could improve cognitive outcomes in COVID-19 patients, as a localised infection of the cornea, but the prevalence of *Fusarium* spp. among culture-proven cases of fungal keratitis varies by country. Many surveys found Fusarium spp. to be the most common aetiological agents of keratomycosis, while *Aspergillus* spp and *Candida* spp. predominated in other studies [4,5]. The species reported most often was *Fusarium solani*, and *Fusarium keratitis* may occur as a mixed infection with bacteria, mainly Streptococcus and Staphylococcus spp., or herpes simplex virus [6,7].

Fusarium keratitis epidemiology varies by country, with less developed, tropical and subtropical countries being the most affected. Climate appears to play a significant role in the dominance of certain species in fungal keratitis. Southern Florida, Ghana, and southern India, for example, have similar climatic conditions that appear to favour the predominance of *Fusarium* spp. [8]. In contrast, keratitis caused by *Fusarium* spp. is uncommon in temperate European countries: only four cases have been reported from Paris, France in the last eight years, and only one case has been diagnosed in Hungary [9]. *Fusarium* spp. prevalence in mycotic keratitis may also vary depending on climatic conditions within a single country, as evidenced by data from various regions of China, Ghana and India [6-10]. In these studies, the proportion of farmers and agricultural workers among patients with mycotic keratitis was relatively high (16%-86%). Male patients outnumbered females, with male:female ratios ranging from 1.4:1 to 3.5:1, with the exception of a study from Nepal, where both sexes were affected equally [11]. The average age of the patients in the studies ranged from 35.8 years to 59 years.

Aside from a study from Pennsylvania, where only 8.3% of patients reported a recent trauma, corneal trauma was the most common predisposing factor for keratomycosis, with an incidence ranging from 31.6% to 89.9% [12]. Plant material (paddy, tree branch, thorn, hay, sugar cane, grass, corn stalks, onions, ground nuts, kernel, palm leaf), animal matter (cow's tail, cow dung, insect, cat scratch, hen peck), dust, soil, mud, stones, glass, metal objects, and fingernails were among the traumatising agents. Other reported risk factors included the use of topical corticosteroids, previous eye surgery, pre-existing ocular diseases (e.g., lagophthalmos, chronic dacryocystitis, corneal scarring or ulcer), systemic diseases like diabetes mellitus or leprosy, and contact lens use. A positive correlation with HIV carriage was discovered in a Tanzanian study, where 81.2% of patients with fungal keratitis were HIV positive, compared to only 33% of those with non-fungal keratitis [13].

Endophthalmitis is a potential complication of *Fusarium* spp. infection of the cornea, and it can lead to deterioration of visual acuities, including loss of light perception. Ten patients developed endophthalmitis from 159 cases of *Fusarium keratitis* in Florida, highlighting the importance of early diagnosis and suspicion of endophthalmitis in patients with keratomycosis that does not respond to aggressive topical antifungal treatment [14]. The presence of a coarse granular infiltration of the corneal epithelium and anterior stroma may be the first sign of fungal keratitis [15].

References

1. Helms, Julie, et al. "Neurologic features in severe SARS-CoV-2 infection. *N. Engl. J. Med.* 382.23 (2020): 2268-2270.
2. Vickers, Neil J. "Animal communication: when i'm calling you, will you answer too?." *Curr. biol.* 27.14 (2017): R713-R715.
3. Ritchie, K., et al. "The cognitive consequences of the COVID-19 epidemic: collateral damage?." *Brain communications 2.2* (2020): fcaa069.
4. Quattrin, R., et al. "Health promotion campaigns and mass media: Looking for evidence." *Prim. Health Care: Open Access* 5.1 (2015): 1-7.
5. Pechtner, V, et al. "A new approach to drug therapy: Fc-fusion technology *Prim. Health Care: Open Access* 2017;7(1):1-5.
6. Vickers, Neil J. "Animal communication: when i'm calling you, will you answer too?." *Curr. biol.* 27.14 (2017): R713-R715.

7. Schirpenbach, Caroline, and Martin Reincke. "Primary aldosteronism: current knowledge and controversies in Conn's syndrome." Nat. clin. pract. Endocrinol. metab. 3.3 (2007): 220-227.

8. Hubbard, Johnathan GH, William B. Inabnet, and Chung-Yau Lo. *Endocrine Surgery: principles and practice*. London: Springer, 2009.

9. Stowasser, Michael, et al. "Laboratory investigation of primary aldosteronism." *Clin. Biochem. Rev.* 31.2 (2010): 39.

10. Cusumano, Lucas R., et al. "Use of Bony Landmarks during Adrenal Venous Sampling to Guide Catheterization of the Left Adrenal Vein." *Arab J. Interv. Radiol. 5.01* (2021): 025-029.

11. Conn, Jerome W., and Lawrence H. Louis. "Primary aldosteronism, a new clinical entity." *Ann. intern. med.* 44.1 (1956): 1-15

12. Singh, Ajay K., and Gordon H. Williams, eds. Textbook of nephro-endocrinology. *Acad. Press*, 2009.

13. Brown, Morris J. "Platt versus Pickering: what molecular insight to primary hyperaldosteronism tells us about hypertension." *JRSM cardiovasc. dis.* 1.6 (2012): 1-8.

14. Choi, Murim, et al. "K+ channel mutations in adrenal aldosterone-producing adenomas and hereditary hypertension." *Science* 331.6018 (2011): 768-772.

15. Hubbard, Johnathan GH, et al.. *Endocrine Surgery: principles and practice*. London: Springer, 2009.

Cite this article: Nicoldi. F and Randall. J. *Fusarium* spp. Involvement in Microbial Keratitis. Prim Health Care, 2023, 13(2), 490.