

following cataract surgery. NICE guidance [2] comments that postoperative topical antibiotic prescribing is “part of standard practice” without advising it and recommending further research. Overall, 97% of ASCRS members use them [3], and the version of Medisoft EPR used at my institution produces a prescription for a 2 week ‘course’ of antibiotics without prompting the surgeon to confirm the default position.

According to The Scottish Intercollegiate Guidelines Network [4] which covers ophthalmic as well as other disciplines of surgery, appropriate surgical prophylaxis is usually defined as a single preoperative dose though this can be extended to a maximum of 24 h for orthopaedic implants. Prolonged courses are thought to be unhelpful or deleterious though evidence for this in cataract surgery is lacking. Herrinton et al. [5] found that addition of postoperative topical antibiotics to an intracameral application increased the incidence of endophthalmitis (odds ratio of 1.6) though they commented on a possible lack of significance with only 11,000 patients in the intracameral only group.

The NICE request for further research is well made but surgeons can be reassured that endophthalmitis will not become much more common if they discontinue this

probably inappropriate antibiotic prescribing as I did 15 years ago. Doing so could clarify this topic through our national dataset.

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

### References

1. Fayers T, et al. Overprescribing of antibiotics by UK ophthalmologists. *Eye*. 2018;32:240–2.
2. Cataracts in adults: management. National Institute for Health and Care Excellence. 2017. <https://www.nice.org.uk/guidance/ng77>. Accessed 16 Mar 2018.
3. Chang DF, et al. Antibiotic prophylaxis of postoperative endophthalmitis after cataract surgery: Results of the 2014 ASCRS member survey. *J Cataract Refract Surg*. 2015;41:1300–5.
4. SIGN 104 Antibiotic prophylaxis in surgery. Scottish Intercollegiate Guidelines Network. 2014. [www.sign.ac.uk/sign-104-antibiotic-prophylaxis-in-surgery.html](http://www.sign.ac.uk/sign-104-antibiotic-prophylaxis-in-surgery.html). Accessed 16 Mar 2018.
5. Herrinton LJ, et al. Comparative effectiveness of antibiotic prophylaxis in cataract surgery. *Ophthalmology*. 2016;123:287–94.

*Eye* (2018) 32:1678–1680

<https://doi.org/10.1038/s41433-018-0145-9>

## Endophthalmitis in patients co-infected by HIV and sporotrichosis: a systematic review of published case reports

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**Electronic supplementary material** The online version of this article (<https://doi.org/10.1038/s41433-018-0145-9>) contains supplementary material, which is available to authorized users.

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Received: 4 April 2018 / Accepted: 26 April 2018 / Published online: 7 June 2018

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Sporotrichosis cases in HIV-infected patients have increased in recent decades [1, 2]. A systematic review has showed that, compared with exogenous endophthalmitis caused by *Sporothrix*, endogenous endophthalmitis (EE) is more common in HIV-infected patients from hyperendemic areas [3]. These findings suggest that HIV infection may predispose to an increased risk for progression to EE in patients with sporotrichosis [3]. However, EE rate and factors associated with this condition in patients co-infected by HIV and sporotrichosis has not been described. Here we

investigate this rate and factors associated with this condition using data collected from the published literature.

## Methods

We performed a systematic review in multiple databases (including PubMed, MEDLINE, EMBASE, and Scopus) to Dec 20, 2017, to identify all case reports and case series describing patients co-infected by HIV and sporotrichosis. This systematic review was performed in accordance with the Preferred Reporting Items for a Systematic Review and Meta-analysis (PRISMA) [4]. Our inclusion criteria included patients with sporotrichosis confirmed by positive *Sporothrix* culture from tissue or clinical samples and infection by HIV confirmed by laboratory tests. Patients were classified as having EE if they had intraocular inflammation with a positive intraocular *Sporothrix* culture

**Table 1** Demographics and clinical characteristics from patients HIV/ sporotrichosis co-infected with and without EE

Characteristic	EE group	Non-EE group	<i>p</i> Value
No. (%) of patients	5 (7.7%)	60 (92.3%)	
Age, y			
Mean (SE)	33 (2.9)	37.5 (1.4)	0.347*
Range	25–43	11–49	NA
Sex, No. (%) of patients			
Male	5 (100%)	51 (85%)	0.351**
Female	0 (0.0%)	9 (15%)	
Please of residence			
Hyperendemic <sup>a</sup>	4 (80%)	35 (58.3%)	0.342**
Non-hyperendemic	1 (20%)	25 (41.7%)	
Sporotrichosis clinical form, No. (%) of patients			
Disseminated	5 (100%)	32 (53.3%)	0.393**
Disseminated cutaneous	0 (0.0%)	13 (21.7%)	
Lymphocutaneous	0 (0.0%)	8 (13.3%)	
Fixed cutaneous	0 (0.0%)	3 (5.0%)	
Others	0 (0.0%)	4 (6.7%)	
Mean CD4 count, cell/uL (range) <sup>b</sup>	168.25 (25–600)	184.45 (6–1100)	0.898*
Organism, No. (%)			
<i>Sporothrix schenckii</i>	2 (40%)	59 (98.3%)	0.0001**
<i>Sporothrix brasiliensis</i>	3 (60%)	0 (0.0%)	
<i>Sporothrix</i> spp.	0 (0.0%)	1 (1.7%)	

EE endogenous endophthalmitis, SE standard error

\**t*-Student

\*\* $\chi^2$  test

<sup>a</sup>Hyperendemic: Brazil, an area known to have a high rate of sporotrichosis

<sup>b</sup>Median CD4 + count was obtained from four patients with EE and 47 patients without EE.

or positive *Sporothrix* culture from tissue or clinical samples (skin biopsy and/or exudate, cerebrospinal fluid, sputum, blood and synovial fluid). Patients demographic (gender, age and please residence), clinical characteristics (sporotrichosis clinical form, and the median CD4+ T-cell lymphocyte count) and microbial data were recorded. To assess the independent association between EE and characteristics of these patients, we compared patients with and without EE using univariate analysis with  $\chi^2$  and *t* tests. Statistical analysis was conducted using the PSS software (Chicago, IL, USA).

## Results

A total of 43 publications reporting 65 individual case reports were included for data extraction and analysis (supplementary information) [1, 3, 5–7]. The EE rate in patients co-infected by HIV and sporotrichosis was 7.7% (7 eyes of 5 patients). Choroiditis was the most common clinical manifestation (5 eyes), followed by retinochoroiditis (1 eye), and granulomatous uveitis (1 eye). Culture of ocular specimens was *Sporothrix* positive in 1 of 5 patients with EE. All patients with EE had disseminated sporotrichosis. *S. schenckii* was causative fungus from all cases of the non-EE group ( $P < 0.0001$ ) (Table 1). There were no independent association in demographic characteristics, sporotrichosis clinical form, and the median CD4+ T-cell lymphocyte count between the patients with and without EE ( $P > 0.05$ ) (Table 1).

## Discussion

Endophthalmitis due to *Sporothrix* species is extremely rare, with only few published case reports. This could have influenced on EE rate in patients co-infected by HIV and sporotrichosis, and our study could have either underestimated or overestimated the EE rate, resulting in possible bias. Therefore, EE rate in patients co-infected by HIV and sporotrichosis found in this study was low, it is less likely to recover *Sporothrix* fungus of ocular specimens, and there were no association between the clinical factors and EE. Although these findings limited, the development of EE only seems to be one of the manifestations of disseminated sporotrichosis in patients HIV-infected, therefore, better-designed studies with a well-selected population are essential.

## Acknowledgements

**Author contributions** All authors had full access to all the data in the study and takes responsibility for the integrity of the data and the

accuracy of the data analysis. Study concept and design: All authors. Acquisition, analysis, or interpretation of data: All authors. Drafting of the manuscript: All authors. Critical revision of the manuscript for important intellectual content: Ramírez-Soto, Bonifaz, Tirado-Sánchez. Statistical analysis: Ramírez-Soto

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

### References

1. Moreira JA, Freitas DF, Lamas CC. The impact of sporotrichosis in HIV-infected patients: a systematic review. *Infection*. 2015;43(3):267–76.
2. Freitas DFS, Valle ACFd, da Silva MBT, Campos DP, Lyra MR, de Souza RV, et al. Sporotrichosis: an emerging neglected opportunistic infection in HIV-infected patients in Rio de Janeiro, Brazil. *PLoS Negl Trop Dis*. 2014;8(8):e3110.
3. Ramírez Soto MC. Differences in clinical ocular outcomes between exogenous and endogenous endophthalmitis caused by *Sporothrix*: a systematic review of published literature. *Br J Ophthalmol*. 2017. <https://doi.org/10.1136/bjophthalmol-2017-310581>.
4. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *BMJ*. 2009;339:b2700.
5. Biancardi AL, Freitas DF, Valviessa VR, Andrade HB, de Oliveira MM, do Valle AC, et al. Multifocal choroiditis in disseminated sporotrichosis in patients with HIV/AIDS. *Retin Cases Brief Rep*. 2017;11(1):67–70.
6. Silva-Vergara ML, de Camargo ZP, Silva PF, Abdalla MR, Sgarbieri RN, Rodrigues AM, et al. Disseminated *Sporothrix brasiliensis* infection with endocardial and ocular involvement in an HIV-infected patient. *Am J Trop Med Hyg*. 2012;86(3):477–80.
7. Lyra MR, Nascimento ML, Varon AG, Pimentel MI, Antonio LdeF, Saheki MN, et al. Immune reconstitution inflammatory syndrome in HIV and sporotrichosis coinfection: report of two cases and review of the literature. *Rev Soc Bras Med Trop*. 2014;47(6):806–9.