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Stenotrophomonas infections: a systematic review and meta-analysis of comparative efficacy of available treatments - preliminary results

F. Licciardi[2], A. E. Maraolo[1], I. Gentile[2], A. Saracino[3], A. Belati[3], D. F. Bavaro[3]

[1]First Division of Infectious Diseases, Cotugno Hospital, AORN Dei Colli Naples, [2]Section of Infectious Diseases, Department of Clinical Medicine and Surgery, University of Naples "Federico II" Naples, [3]Department of Biomedical Sciences and Human Oncology, Clinic of Infectious Diseases, University of Bari Bari

Background: *Stenotrophomonas maltophilia* is a Gram-negative bacillus that causes various opportunistic infections that are still a challenge for clinicians due to high frequency of intrinsic and acquired resistance to broad spectrum antibiotics. The aim of the present work is to carry out a systematic review of available evidence attempting to individuate the best treatment of *S. maltophilia infections.* In particular, the role of treatments based on trimethoprim-sulfamethoxazole (TMP/SMX), tetracycline derivatives (TDs) and fluoroquinolones (FQs) was investigated.

Materials: PubMed/MEDLINE and Embase were searched from inception up to 15st March 2022. The primary outcome was all-cause mortality. Secondary outcomes (not addressed in this preliminary report) included clinical failure, infection recurrence, adverse events, lenght-of-stay. A random-effects meta-analysis was carried out. This study was registered with PROSPERO, CRD42022321893.

Results: Twenty-one studies were included. A significant difference in terms of overall mortality was observed [odds ratio (OR) 1.43, 95% confidence interval (CI) 1.12–1.84, I^2 =36%] when comparing as monotherapy TMP/SMX versus FQs (9 studies, 2296 patients). Prediction interval (PI) did not touch the no-effect line (1.061.93) as showed in Figure 1, but the result were not robust to unmeasured confounding (E-value for point estimate of 1.35). At any rate, when allowing for combination, TMP/SMX-based therapy confirmed to be inferior to FQ-based therapy (OR 1.35, 95% CI 1.08-1.69, PI 1.05-1.74, I^2 =26%; 12 studies, 2596 patients). If comparing TMP/SMX with TDs, the former showed an association with higher mortality, but not significant and with very wide PI (OR 1.95, 95% CI 0.79–4.82, PI 0.01-685.99, I^2 = 0%; 3 studies, 346 patient). Eventually, FQs exerted a protective effect versus TDs, but not significant and with very ample PI as well (OR 0.80, 95% CI 0.28–2.23, PI 0.00-12453.68, I^2 = 28%; 3 studies, 174 patients).

Conclusions: Against *S. maltophilia* infections, FQs and TDs seem to be a reasonable choice as alternative to TMP/SMX. More in-depth analysis of observational studies and hopefully data from clinical trials are needed to better inform therapeutic choices in this setting.

Figure 1. Forest plot showing comparison in terms of mortality between TMP/SMX and FQs as monotherapy.