Stenotrophomonas maltophilia treatment

Treatment of Stenotrophomonas maltophilia infections can be difficult, as S. maltophilia is inherently resistant to many classes of antibiotics [1].

A bacterial strain of the Gram-negative opportunistic pathogen Stenotrophomonas maltophilia capable of degrading colistin and exhibiting a high-level colistin resistance was isolated from the soil environment. A colistin-degrading protease (Cdp) was identified in this strain, and its contribution to colistin resistance was demonstrated by growth inhibition experiments using knock-out (Δcdp) and complemented (Δcdp::cdp) mutants [2]

Stenotrophomonas maltophilia is an urgent global threat due to its increasing incidence and intrinsic antibiotic resistance. Antibiotic development has focused on carbapenem-resistant Enterobacteriaceae, Pseudomonas, and Acinetobacter, with approved antibiotics in recent years having limited activity for Stenotrophomonas. Accordingly, novel treatment strategies for Stenotrophomonas are desperately needed [3].

Fluoroquinolone and trimethoprim-sulfamethoxazole (SXT) monotherapies may be equally effective for the treatment of S. maltophilia infections. Resistance was documented in subsequent isolates of S. maltophilia in both groups [4].

Antibiotics with in vitro activity against S. maltophilia include trimethoprim-sulfamethoxazole (SXT), fluoroquinolones (FQs), tetracyclines, ticarcillin-clavulanate, and ceftazidime; however, there are limited clinical data on the use of these agents [5] [6] [7] [8] [9] [10]

1)
Varshini MK, Ganesan V, Sundaramurthy R, Rajendran T. Risk Factors and Clinical Outcomes of Stenotrophomonas maltophilia Infections: Scenario in a Tertiary Care Center from South India. Indian J Crit Care Med. 2022 Aug;26(8):935-937. doi: 10.5005/jp-journals-10071-24288. PMID: 36042762; PMCID: PMC9363814.
2)
Lee DH, Cha JH, Kim DW, Lee K, Kim YS, Oh HY, Cho YH, Cha CJ. Colistin-degrading proteases confer collective resistance to microbial communities during polymicrobial infections. Microbiome. 2022 Aug 19;10(1):129. doi: 10.1186/s40168-022-01315-x. PMID: 35982474; PMCID: PMC9389796.
3)
Gibb J, Wong DW. Antimicrobial Treatment Strategies for Stenotrophomonas maltophilia: A Focus on Novel Therapies. Antibiotics (Basel). 2021 Oct 9;10(10):1226. doi: 10.3390/antibiotics10101226. PMID: 34680807; PMCID: PMC8532924.
4)
Wang YL, Scipione MR, Dubrovskaya Y, Papadopoulos J. Monotherapy with fluoroquinolone or trimethoprim-sulfamethoxazole for treatment of Stenotrophomonas maltophilia infections. Antimicrob Agents Chemother. 2014;58(1):176-82. doi: 10.1128/AAC.01324-13. Epub 2013 Oct 21. PMID:

24145530; PMCID: PMC3910778.
5)

Falagas ME, Valkimadi PE, Huang YT, Matthaiou DK, Hsueh PR. 2008. Therapeutic options for Stenotrophomonas maltophilia infections beyond co-trimoxazole: a systematic review. J. Antimicrob. Chemother. 62:889–894. 10.1093/jac/dkn301
6)

Czosnowski QA, Wood GC, Magnotti LJ, Croce MA, Swanson JM, Boucher BA, Fabian TC. 2011. Clinical and microbiologic outcomes in trauma patients treated for Stenotrophomonas maltophilia ventilator-associated pneumonia. Pharmacotherapy 31:338–345. 10.1592/phco.31.4.338
7)

Samonis G, Karageorgopoulos DE, Maraki S, Levis P, Dimopoulou D, Spernovasilis NA, Kofteridis DP, Falagas ME. 2012. Stenotrophomonas maltophilia infections in a general hospital: patient characteristics, antimicrobial susceptibility, and treatment outcome. PLoS One 7:e37375. 10.1371/journal.pone.0037375
8)

Wang WS, Liu CP, Lee CM, Huang FY. 2004. Stenotrophomonas maltophilia bacteremia in adults: four years' experience in a medical center in northern Taiwan. J. Microbiol. Immunol. Infect. 37:359–365
9)

Muder RR, Harris AP, Muller S, Edmond M, Chow JW, Papadakis K, Wagerner MW, Bodey GP, Steckelberg JM. 1996. Bacteremia due to Stenotrophomonas (Xanthomonas) maltophilia: a prospective, multicenter study of 91 episodes. Clin. Infect. Dis. 22:508–512. 10.1093/clinids/22.3.508
10)

Belvisi V, Fabietti P, Del Borgo C, Marocco R, Di Vincenzo E, Soscia F, Mastroianni CM. 2009. Successful treatment of Stenotrophomonas maltophilia soft tissue infection with tigecycline: a case report. J. Chemother. 21:367–368