Vancomycin Indications

Although clinical guidelines recommend vancomycin-based combination therapy for patients with postoperative intracranial infections in neurosurgery, the trend of global bacterial resistance and the management of antimicrobial agents have made monotherapy a common treatment option for some patients.

Vancomycin for Central Nervous System Infection.

Superficial wound infection

Start the patient empirically on vancomycin plus cefepime or meropenem

Postoperative discitis

most start with anti-staphylococcal antibiotics(initial empiric therapy:vancomycin±PO rifampin) and cefepime or meropenem. Modify based on sensitivities if positive cultures are obtained

Osteomyelitis of the skull

Debridement surgery is followed by at least 6–12 weeks of antibiotics.

Until MRSA is ruled out: vancomycin + cefepime or meropenem. Culture results guide the choice of antibiotics. Once MRSA is ruled out, vancomycin may be changed to penicillinase-resistant synthetic penicillin (e.g. nafcillin). Most treatment failures occurred in patients treated with < 4 weeks of antibiotics following surgery.

Spinal epidural abscess

If the organism and source are unknown, S. aureus is most likely.

Empiric antibiotics:

● Ceftriaxone or cefepime (use when pseudomonas is a concern) PLUS ● metronidazole PLUS ● vancomycin:

○ until methicillin resistant S. aureus (MRSA) can be ruled out

○ once MRSA is ruled out switch to synthetic penicillin (e.g. nafcillin or oxacillin)

● ± rifampin PO

Craniotomy

prophylactic antibiotics: (optional) ideally 30–60 minutes before incision. Most antibiotics, it is given in the O.R. before the skin incision. For antibiotics that take a long time to infuse (e.g. vancomycin) it may help to order it to be given “on call to O.R.”

Vancomycin is also taken by mouth as a treatment for severe Clostridium difficile colitis.

It is recommended intravenously as a treatment for complicated skin infections, bloodstream infections, endocarditis, bone and joint infections, and meningitis caused by methicillin-resistant Staphylococcus aureus.

Data suggest that the use of vancomycin as a prophylactic agent for cerebrospinal fluid shunt placement reduces the rate of shunt infections in the context of the high prevalence of Methicillin resistant Staphylococcus aureus. [1)].

The local application of powdered vancomycin was not associated with a significant difference in the rate of deep surgical site infection SSI after spinal deformity surgery, and other treatment modalities are necessary to limit infection for this high-risk group. This study is in contrary to prior studies, which have reported a decrease in SSI with vancomycin powder.Level of Evidence: 2 [2)]

Dombrowski et al. found a high rate of treatment failure in an urban population among patients who completed recommended therapy, largely with vancomycin alone. Failure in osteomyelitis was particularly common. High quality comparative studies of antibiotic regimens for MRSA infections, particularly osteomyelitis, are needed [3)].

1)
Tacconelli E, Cataldo MA, Albanese A, Tumbarello M, Arduini E, Spanu T, Fadda G, Anile C, Maira G, Federico G, Cauda R. Vancomycin versus cefazolin prophylaxis for cerebrospinal shunt placement in a hospital with a high prevalence of meticillin-resistant Staphylococcus aureus. J Hosp Infect. 2008 Aug;69(4):337-44. doi: 10.1016/j.jhin.2008.04.032. Epub 2008 Jul 7. PubMed PMID: 18602187.
2)
Martin JR, Adogwa O, Brown CR, Bagley CA, Richardson WJ, Lad SP, Kuchibhatla M, Gottfried ON. Experience with intrawound vancomycin powder for spinal deformity surgery. Spine (Phila Pa 1976). 2014 Jan 15;39(2):177-84. doi: 10.1097/BRS.0000000000000071. PubMed PMID: 24158179.
3)
Dombrowski JC, Winston LG. Clinical failures of appropriately-treated methicillin-resistant Staphylococcus aureus infections. J Infect. 2008 Aug;57(2):110-5. doi: 10.1016/j.jinf.2008.04.003. Epub 2008 Jun 3. PubMed PMID: 18533269; PubMed Central PMCID: PMC2579945.