ECHINOCANDIN ANTIFUNGAL DRUGS

Bilukha D.V.
Scientific supervisor: Riabova O.O.
National university of Pharmacy, Kharkiv, Ukraine
bva231611@gmail.com

Introduction. Clinical studies have confirmed the marked increase in the incidence of disseminated candidiasis, reflecting a parallel increase in the frequency of candidemia. Timely detection of infection and initiation of therapy are extremely important for the treatment of the disease. The changing pattern in fungal infections has driven the need to expand the targets of antifungal activity. The echinocandins are the newest addition to the arsenal against fungal infections. The echinocandins are large lipopeptide molecules that are inhibitors of beta-(1,3)-glucan synthesis, an action that damages fungal cell walls. In vitro and in vivo, the echinocandins are rapidly fungicidal against most Candida spp. and fungistatic against Aspergillus spp.

Aim. Study of modern standards of medical care for patients with candidiasis. Study of echinocandins as a last addition to the arsenal against fungal infections.

Materials and methods. We conducted an analysis of articles, an adapted clinical guideline based on evidence, a unified clinical protocol providing for treating patients of disseminated candidiasis with echinocandins.

Results and discussion. The echinocandin drugs are cyclic hexapeptides N-linked to a fatty acyl side chain and are potent inhibitors of β-1,3-D-glucan synthase, which is responsible for biosynthesis of β-1,3-D-glucan, the major cell wall biopolymer. The first of the class to be licensed was caspofungin and the second was micafungin. These fungal-specific drugs show concentration-dependent antifungal activity against susceptible Candida spp. and Aspergillus spp. without cross-resistance to existing antifungal agents, which enables them to be effective against azole-resistant yeasts and moulds. Echinocandins are available for only intravenous administration due to inconsistent oral absorption. Adverse events are generally mild, including (for caspofungin) local phlebitis, fever, abnormal liver function tests, and mild hemolysis. Dosing is once daily and drug interactions are few. The echinocandins distribute well into tissues, and are metabolized by the liver. Results of studies of caspofungin in candidemia and invasive candidiasis suggest equivalent efficacy to amphotericin B, with substantially fewer toxic effects. Absence of antagonism in combination with other antifungal drugs suggests that combination antifungal therapy could become a general feature of the echinocandins, particularly for invasive aspergillosis.

Conclusion. Overall, echinocandin drugs demonstrate a high therapeutic index with strong efficacy and excellent safety and tolerability profiles with few drug interactions and related adverse events.