

ANIDULAFUNGIN: New antifungal agent

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INTRODUCTION

Over the last two decades the rate of fungal infection have increased substantially due to use of new regime of chemotherapy bone marrow & solid organ transplantation technique and critically ill patient . Candida species are among the most important cause of nosocomial blood stream infection. Candida albicans remains the most important cause of invasive candidiasis worldwide but increased rate of isolation of nonalbicans, nonglabrata candida spp. is being observed.

Echinocandins are natural cyclical lipopeptide molecules. The currently available echinocandins are semi-synthetic analogue of natural echinocandins. Key to the activity of these agents is fatty acid side chain attached to the N terminal of the nucleus. Anidulafungin the newest entry is derived from echinocandin B a natural product of fermentation of *Aspergillus nidulans*.

MECHANISM OF ACTION:

Anidulafungin is a non-competitive inhibitor of (1,3) β -D-glucan synthase an enzyme complex essential to synthesis of (1,3) β D glucan which make much of fungal cell wall structure. The mammalian cell do not have (1,3) β D glucan synthase making this enzyme an ideal target for antifungal activity with no cross linkage to mammalian cell and hence little if any clinical toxicity.

SPECTRUM OF ACTIVITY:

Anidulafungin is active against Candida Spp.: *C. albicans*, *C. glabrata*, *C. parapsilosis*, *C. tropicalis* and many of nonalbicans species. Anidulafungin lacks activity against *Cryptococcus neoformans*, moulds of *Fusarium* Spp. And *Zygomycetes* Spp.

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PHARMACOKINETIC AND PHARMACODYNAMICS

Anidulafungin is administered by I.V. infusion is highly protein bound and has large volume of distribution (0.6 L/Kg) close to total body water. It has elimination half life of 26.5 hours. It does not undergo hepatic metabolism but undergoes slow chemical degradation in circulation and rapidly eliminated via faecal route. It has negligible renal excretion. Hence no dose adjustment is required in hepatic and renal impairment.

INDICATION

1. Invasive candidiasis including candidemia.
2. Esophageal candidiasis.

DOSAGE

Invasive candidiasis: 200 mg loading dose followed by 100 mg maintenance dose.

Esophageal candidiasis: 100mg loading dose followed by 50 mg maintenance dose.

Total reconstituted volume required for 100 mg is 30 ml and Infusion volume is 100ml.

Total reconstituted volume required for 200mg is 60ml and infusion volume is 200ml.

Rate of infusion should not exceed 1.4 ml/min for 100mg and 200mg doses.

CONTRAINDICATION

Hypersensitivity to drug.

Pregnancy

? Lactation

Paediatric patient

ADVERSE EVENTS

The common adverse events are flushing, rash, pruritis, diarrhoea, elevated liver enzymes, thrombocytopenia coagulopathy, headache and convulsion.

DRUG INTERACTION

It does not inhibit or induce hepatic cytochrome P 450 enzyme system and hence it does not alter metabolism of drugs metabolised by this system so there is no significant drug interaction.

SUMMARY

Anidulafungin is a new echinocandin antifungal agent. It is highly effective against candida albicans and many of non albicans spp. It has negligible drug interactions and very few side effect profile.

BIBLIOGRAPHY

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The burden of suffering and economic loss caused by Tuberculosis (TB) is an affront to our conscience. TB is curable and preventable disease. TB control efforts in the last decade in our country have been tremendous. To deal with common man's ignorance, misconcepts and doubts about TB in scientific yet comprehensive manner is an essential aspect of these control efforts.

Dr. Manisha Ruikar, who worked as WHO-RNTCP Medical Consultant in Gujarat; has consciously contributed to such efforts by writing health educative book for masses in Marathi entitled '**Kshayrogacha karuya kshay**'. With the publication of this book, Dr. Ruikar has taken her anti-TB work ahead in the larger interest of the community.

The book covers all aspects of TB like history, causes, transmission, types, diagnosis, treatment, side effects of anti-TB drugs, HIV-TB, MDR-TB & TB in women and children; at length. Simple yet effective language of the book makes it absorbingly readable.

Dr. Ruikar deserves genuine appreciation for two distinct features of her book. Firstly, the right and the responsibility are two sides of the same coin. As cure of TB is the right of every TB patient, not to spread the disease is his responsibility. Dr. Ruikar has concluded every chapter with enumeration of respective responsibilities of TB patient. Realisation of the same leads the patient to adapt TB related health behaviour, restricting the spread of TB.

Secondly, Health Education intends to bring about voluntary change in the health behaviour of the people. Health education regarding TB aims at early diagnosis and complete treatment. Dr. Ruikar has given very simple examples in day-to-day life to convince TB patient to adapt TB related health behaviour. Such convinced patient is more likely to change his health behaviour positively as per expectation of the treating doctor.

Medical doctors would find this book very informative & interesting. Cover page seems to be attractive with precise title and RNTCP logo. The cost of the book is very much within the reach of common man, even belonging to rural and tribal area. The book should be made easily available by the publisher, Shree Mangesh Prakashan, Nagpur (0712-2437276 & 98238 07276); to all grass root level health workers, TB patients and their family members and of course to non-tuberculous common man so as to fulfil its purpose of publication.

Personally, I sincerely appeal, first to all the readers of this journal to read this book &/or to make your patients aware about its availability &/or to make it available at your clinic/nursing home for your patients &/or to share about its availability with medical practitioners serving in private/government health sector at periphery. My second appeal is to all District Tuberculosis Officers to make this book available to their permanent as well as contractual personnel who are actually involved in implementation of RNTCP. Let us work together to combat TB...

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