INFECTIOUS DISEASES (BACTERIAL, FUNGAL, VIRAL, PARASITIC, INFESTATIONS)

ULTRASTRUCTURE CHANGES OF CANDIDA ALBICANS, CANDIDA TROPICALIS, CANDIDA GUILLIERMONDI AND MALASSEZIA FURFUR TREATED WITH CLIOQUINOL

Zimeng You [1] - Chaoliang Zhang [2] - Song Lei [3] - Yuping Ran [1]

West China Hospital, Sichuan University, Dermatovenereology, Chengdu, China [1] - West China Stomatology Hospital, Sichuan University, State Key Laboratory Of Oral Diseases, Chengdu, China [2] - West China Hospital, Sichuan University, Pathology, Chengdu, China [3]

Introduction: Clioquinol was firstly produced in 1934 as antiseptic. The target of antifungal function was unknown though apoptosis, autophagy, cell cycle arrest may be associated with the anti-neurodegenerative diseases and anti-tumor function. We confirmed the antifungal function of clioquinol was strong and broad in former experiment. But the antifungal mechanism was still unknown.

Objective: To observe the ultrastructure changes of Candida albicans, Candida tropicalis, Candida guilliermondi and Malassezia furfur treated with clioquinol under fluorescence microscope, scanning electron microscope, transmission electron microscope and seek for the possible antifungal target.

Materials and Methods: Slide culture was made on culture medium with active pharmaceutical ingredient added at concentration of 0.5 minimum inhibitory concentration (MIC). The observation under fluorescence microscope, scanning and transmission electron microscope was conducted after 7 days.

Results: After treated with clioquinol at 0.5 MIC for 7 days, obvious ultrastructure changes were observed under microscope. For Candida albicans and tropicalis, fluorescence intensity weakened and hyphae formation reduced notably compared with blank control under fluorescence microscope. Depression and fissures of spores were observed under scanning electron microscope. For Candida guilliermondi, only change of fluorescence intensity and depression of spores were seen. As for Malassezia furfur, budded spores reduced besides fissures of spores. Changes of cell walls tightness were observed under transmission electron microscope in Candida albicans.

Conclusions: The obvious change of fluorescence intensity, hyphae formation, spore surface and cell wall was observed The antifungal function of clioquinol may be related to

chitin synthesis, sporation and yeast-mycelium phase conversion.