

The Fungicidal Effects of Shock Wave Treatment

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Device:

Storz Modulith SLX-F2 lithotripter

Introduction:

The main microorganisms implicated in deep tissue, bone and prosthetic material infections in orthopaedic patients are bacteria, particularly the Staphylococci. Fungi that like humans are eukaryotic cells, such as *C. albicans* the Thrush Fungus are of paramount importance as they form biofilms at the site of infection thus preventing the activities of the immune system and antifungal drug. The aim of this study was to determine whether ESW at levels used to treat patients can kill *C. albicans* planctonic cells.

Methods:

Four sets of duplicate experiments mimicking the conditions during infection were performed in which *C. albicans* cells were sandwiched in animal muscle in semisolid agar of similar viscosity to pus. The *Candida* cells were treated with ESW at various settings using the Storz Modulith SLX-F2 lithotripter. The viable counts were compared to those of untreated controls as well as controls that were not exposed to animal muscle.

Results: Exposure of *Candida* cells to animal muscle did not affect their viability. All settings resulted in cell death with 90% killing with 4000 ESW at 3Hz, EFD 6 and large focus. Treatment also caused a physical effect on the muscle at the interface of different viscosities.

Discussion:

This study shows that ESW exert a significant killing on *C. albicans*.

Conclusion:

We believe that the physical effect seen on both sites of the muscle at the interface between low and high viscosity will play a crucial role in clearing infections by permitting antifungal drugs and above all the immune system to penetrate the site of infection.