AMENDED ABSTRACT

Background: Omiganan (OMI) is a rapid acting cationic antimicrobial peptide under investigation as a topical agent to prevent catheter-related infections (CRI). The objective of this report is to describe preliminary microbiology results from a phase III clinical trial of OMIGANANpentahydrochloride (OMI) comparing safety and efficacy of OMI 1% gel (10,000 μg/ml) to control against CRI in a large, multicenter, randomized, double-blind Phase III clinical trial. This clinical trial is now complete, the microbiology results are being finalized and are now being published.

Methods: A total of 2,709 isolates from 1,494 enrolled patients were cultured from catheter segments using the roll plate and sonication techniques. Isolates originated from bloodstream (catheter line [471] and peripheral [826]), catheter placement. Data from the National Nosocomial Infections Surveillance (NNIS) system was used to confirm the pathogens and their resistance trends. Isolates were categorized as Enterobacteriaceae, Acinetobacter spp., and Staphylococcus aureus (SA). Enterococcus spp., and candida spp. Isolates were cultured before initial placement and at post-placement. All isolates (including duplicates) submitted from each patient were included in the analysis. Most isolates were tested against the following antimicrobials: meropenem, piperacillin-tazobactam, ciprofloxacin, gentamicin, ceftazidime, amphotericin B, vancomycin, and foscarnet. The breakpoints were determined using CLSI (2008) guidelines.β-lactam susceptibility testing was performed using broth microdilution. Antifungal susceptibility testing was performed using the CLSI broth microdilution protocol. The MIC and MBC endpoints were determined by CLSI guidelines. The MIC values were determined with the inhibition zone size and visually compared with the standards provided by the Clinical Laboratory Standards Institute (CLSI) and the Breakpoints and interpretations are given in Table 1. All isolates (including duplicates) were included in the analysis. All isolates were tested against the following antimicrobials: meropenem, piperacillin-tazobactam, ciprofloxacin, gentamicin, ceftazidime, amphotericin B, vancomycin, and foscarnet.

Results: The top 11 ranked pathogens from this clinical trial (92.7% of the total; see Table 1) and key R resistant > spp. (1.9%; 69.2% meropenem-resistant) > (1.7%; 19.1% ESBL resistant) > spp. (95) > spp. (52) > (70) > spp. (82) > spp. (95) > spp. (34) > spp. (109) > spp. (27) > spp. (34) > spp. (65) > spp. (27) > spp. (34) > spp. (109). Among ranking pathogens, all (100%) Gram-positive isolates were inhibited by 128 μg/ml of omiganan. Table 1. Cumulative percent inhibited at omiganan MIC values tested against ranking pathogens.

Table 1. Cumulative percent inhibited at omiganan MIC values tested against ranking pathogens.

| Organism (no.) | MIC | MIC Range | ≤0.5 | 1248 | 1 | 6 | 3 | 2 | 6 | 4 | 1 | 2 | 8 | 2 | 5 | 6 | 5 | 1 | 2 |
| Staphylococcus aureus | 64 | 128 | 8-512 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Enterococcus | 2 | 4 | 0.5-8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Acinetobacter | 8 | 16 | ≤2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 |
| Klebsiella | ≤0.5 | ≤2 | ≤2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 |
| Pseudomonas | ≤0.5 | ≤2 | ≤2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 |
| Candida | ≤0.5 | ≤2 | ≤2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 | 100 | 0.0 | 0.5-2 |

The authors are all employees of JMI Laboratories. JMI Laboratories is under investigation by Cadence Pharmaceuticals as a topical agent for the prevention of catheter-related infections. Neomycin was inactive against enterococci and variably active against Gram-negative species (18.4%) and (2.6%).

CONCLUSIONS

- Omiganan represents a ‘novel’ agent that displays antimicrobial activity against many bacterial and fungal pathogens of clinical importance.
- A high level of resistance to mupirocin was detected among both coagulase-negative staphylococci and enterococci.
- The following antimicrobial agents were tested against ranking pathogens: Neomycin was inactive against enterococci and variably active against Gram-negative species (18.4%) and (2.6%).
- Among ranking pathogens, all (100%) Gram-positive isolates were inhibited by 128 μg/ml of omiganan.

SELECTED REFERENCES

- Melo MN, Dugourd D, Castanho MA (2004). Neomycin was inactive against enterococci and variably active against Gram-negative species (18.4%) and (2.6%).
- Neomycin was inactive against enterococci and variably active against Gram-negative species (18.4%) and (2.6%).
- The following antimicrobial agents were tested against ranking pathogens: Neomycin was inactive against enterococci and variably active against Gram-negative species (18.4%) and (2.6%).
- Among ranking pathogens, all (100%) Gram-positive isolates were inhibited by 128 μg/ml of omiganan.

DISCLOSURES

- The study was sponsored by JMI Laboratories, Inc.
- Omiganan is under investigation by Cadence Pharmaceuticals as a topical agent for the prevention of catheter-related infections.
- The authors are all employees of JMI Laboratories.

PRELIMINARY MICROBIOLOGY RESULTS FROM A PHASE III OMIGANAN PENTAHYDROCHLORIDE CLINICAL TRIAL: IN VITRO ACTIVITY AGAINST BACTERIAL AND FUNGAL PATHOGENS

THOMAS R FRITSCHE, JAMES E ROSS, PAUL R RHOMBERG, RONALD N JONES

JMI Laboratories, North Liberty, IA, USA