Microbiology DX

Report on the Effectiveness of Colloidal Silver in Treating Multiple Antibiotic Resistant Coagulase Negative Staphylococcus (MARCoNS), Other Gram Positive and Gram Negative Bacteria, Yeast and Mold in Nares Cultures.

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Introduction:

Chronic Inflammatory Response Syndrome (CIRS) is a complex and chronic illness caused by immune dysregulation following exposure to biotoxin producing organisms. The source could be mold from water damaged buildings (WDB), tick born infections such as Borrelia or Babesia, dinoflagellates such as Pfiesteria or Ciguatera, blue-green algae such as cyanobacteria and brown recluse spider bites. CIRS is a multi-system, multi-symptom illness meditated by a persistent innate immune inflammatory response to toxins, antigens, and inflammagens present in the interior environment of WDBs. Genetically susceptible individuals have an inability to produce protective antibodies to rid the body of toxic offending substances. This genetic defect can be seen in specific HLA DR/DQ haplotypes. CIRS was first identified by Ritchie Shoemaker, M.D. His clinical research has resulted in a step wise approach to patient care that has been demonstrated to treat and prevent symptoms in susceptible individuals.

In CIRS, MARCoNS have been found to colonize the deep nasal cavity in 80% of individuals with low MSH hormone. The presents of MARCoNS in the nasopharynx impairs the body to re-establish normal levels of MSH. Adequate MSH is required for recovery from biotoxin induced CIRS. MARCoNS may exist in a biofilm, which makes it more difficult to treat. A deep nasal culture is obtained and sent to Microbiology Dx, Bedford, MA. If Coagulase Negative Staphylococci are present and resistant to more than one class of antibiotics, then treatment is required. The standard treatment for a patient with a MARCoNS positive Nares culture was established by Ritchie Shoemaker, M.D., and consists of using a nasal spray with Bactroban, EDTA and Gentamicin (BEG) usually 2 sprays each nostril, 3 times a day for 30 days. In recent years the BEG spray has become less effective in eradicating MARCoNS. In July of 2017, Hopkinton Drug introduced a new compounded product for the treatment of MARCoNS consisting of Colloidal Silver-25ppm, EDTA-0.5% and Muculox-15%. From studies done at Microbiology Dx, 98 bacterial cultures, 42 yeast and mold cultures were evaluated with Colloidal Silver and all organisms, gram positive, gram negative bacteria, molds and yeast were eradicated in-vitro in the liquid phase in the test tube.

Objective:

To evaluate the effect of Colloidal Silver on Multiple Antibiotic Resistant Coagulase Negative Staphylococci (MARCoNS), other bacteria, mold and yeast.

Materials:

A. Antimicrobial tested in liquid form consisted of Colloidal Silver at 21 ppm. The Colloidal Silver used was Results RNA ACS 200 ppm diluted to 21 ppm.
B. Organism tested
    a. Staphylococcus epidermidis (SE) ATCC 35984 (strong biofilm producer), MARCoNS positive and other organisms.
    b. A total of 59 different bacteria, 24 gram positive and 35 gram negative were tested. A total of 98 bacterial specimens were tested including 24 MARCoNS (including 6 BF 3+). See Appendix I for complete list.
    c. At total of 42 fungal specimens were tested comprising 13 different molds and 5 different yeast specimens. See Appendix II for complete list.

Testing Protocol:

A. All testing was performed in duplicate.
B. A McFarland Standard (MS) of 0.8 to 1.2 was prepared for the MARCoNS testing and other organisms.
C. All testing was performed in a liquid format.
D. Incubation was performed at 37°C for 48 hours and longer for mold and yeast.
E. Quality control was performed for each organism tested.
F. Tryptic Soy Broth (TSB, liquid nutrient broth) and when necessary Blood Agar Plates were used for the testing.
G. Testing was performed in 12x75 mm polystrene tubes; 100µl of the MS for MARCoNS and other organisms was pipette into 2ml TSB followed by 250µl of colloidal silver (200ppm) for the duplicated test tubes and 250µl of water for the control tubes. All bacterial tubes were incubated at 37°C for 48 hours. The yeast and mold tubes containing Sabouraud broth were incubated at room temperature for 2 to 10 days or until growth appeared in the control tubes. The final concentration of the colloidal silver was 21 ppm based on ACS 200 ppm.

I. 1. The specimens consisted of 98 bacterial cultures of which 80 were patients and 18 were ATCC standardized cultures with defined organisms.
2. The specimens also consisted of 42 fungal cultures. A total of 13 different molds and 5 different yeasts were tested. Of the molds tested 3 were ATCC standardized cultures with defined organisms. 39 of the 42 fungal organisms were patient specimens

Results:

A. There were 24 MARCoNS positive including 6 biofilm strong 3+ positive specimens tested with the colloidal silver 21ppm. All specimens showed no growth at 48 hours and with each specimen the control showed growth. The control for each specimen contained water in place of Colloidal silver to validate the test. The silver eradicated the MARCoNS in all 24 MARCoNS positive specimen tested in-vitro.
B. There were 5 Staph Coag Negative tested. The colloidal silver 21ppm eradicated the Staph Coag Negative in all 5 specimens.
C. There were 9 Staph aureus and 3 Methicillin Resistant Staph aureus (MRSA) tested. The Colloidal silver 21 ppm eradicated the 9 Staph aureus and 3 MRSA in all specimens.
D. See other gram positive bacteria tested in vitro in Appendix I. The colloidal silver 21ppm eradicated all gram positive bacteria tested in-vitro. There were a total of 24 different gram positive organisms comprising 54 cultures.
E. There were 35 gram negative organism tested comprising 44 total gram negative specimens. The colloidal silver 21ppm eradicated the gram negative bacteria in all 44 specimens tested in vitro. See all gram negative specimens tested in the Appendix I.
F. There were 13 different molds tested comprising 31 total cultures. The colloidal silver 21ppm eradicated all mold specimens tested in-vitro. See Appendix II.
G. There were 5 different yeasts tested comprising 11 total cultures. The colloidal silver 21ppm eradicated all yeast specimens tested. See Appendix II.

Conclusion:

A. Colloidal silver was tested against defined organisms and patient specimens. In all cases the colloidal silver eradicated the microorganisms in vitro, in solution.
B. The concentration of colloidal silver 21ppm, was adequate to kill all the microorganisms tested in-vitro, in solution. The of use of colloidal silver (CS) alone in-vivo may not be as effective as in in-vitro since the CS has to penetrate the deep nasal tissue to affect the MARCoNS and other organisms. The addition of EDTA to the CS provides additional effectiveness since the EDTA will break down any biofilm the organism may produce and also has antimicrobial activity against gram positive bacteria, yeast and mold which we demonstrated in a previous study in May 2016. Adding Muculox to the CS and EDTA also enhances the effectiveness by binding to the mucus membrane for increased contact time for the CS and EDTA in the deep nasal passage to eradicate the organisms present.
C. Based on this study and previous studies with EDTA, the combination of CS 25 ppm, EDTA 0.5% and Muculox 15% nasal spray from Hopkinton Drug should prove to be more effective than BEG spray considering the increased failure rate of BEG in the past 2 years.
D. This one formulation should be effective in treating not only bacterial but fungal organisms in-vivo without the need for antifungal agents.
E. The data presented here showing the antimicrobial effects of colloidal silver is supported by extensive research studies in the literature[1].

Colloidal Silver – Important Facts:

A. Colloidal silver was the mainstay of defense against infections until the invention of Penicillin in the 1930's (pg.3).
B. Colloidal silver is both safe and effective for treatment of infectious disease in humans and mammals (pg.33)
C. Colloidal silver does not show any signs of developing antimicrobial resistance (pg.22).
D. The ionic form of silver (Ag_+) is the most effective antimicrobial form of silver. Colloidals are single neutral atoms of silver (Ag°) or cluster of a few atoms with no charge that stay suspended in solution (10-200 nm). Colloidal silver preparations contain between 50-80% neutral silver particles (Ag°) and 20-49% silver ions (Ag_+). The ionic form of silver is the most potent antimicrobial agent against bacteria, yeast, molds and viruses. It also enhances the immune system, and shows anti-inflammatory and anti-cancer activity (pg.10).
E. Ionic silver shows no drug interactions (pg.78).
F. Ionic silver can break through biofilms and this property was also proven in these in-vitro experiments (pg.48).
G. True colloidal silver has never been shown to cause Argyria. Silver salts such as silver sulfate or silver phosphate can cause this blue-ish or grey coloration of the fingernails, eyeballs and skin (pg. 28-32).
H. Ionic silver can eradicate all microorganisms; as an antibacterial at 0.5 to 4.7 ppm and as an antifungal at 1.9 ppm (pg.45).

References:

1. R. Barry King, PhD., The Bible on NanoBioSilver: Ionic and colloidal silver in Natural Health and Wellness, 2015 with 140 research studies cited.

Appendix I

Gram positive (G+) and Gram negative (G-) bacteria tested

All organisms susceptible to 21 ppm of colloidal silver in-vitro

Alpha Strep (G+)
Aeromonas sobria (G-)
Aeromonas salmonicida (G-)
Acinetobacter lwoffii (G-)
Acinetobacter baumannii (G-)
Acinetobacter radioresistens (G-)
Achromobacter dentrificans (G-)
Alcaligenes faecallis (G-)
Bacillus species (G+)
Beta Strep Group A ATCC 12384 (G+)
Beta Strep Group B ATCC 12386 (G+)
Beta Strep Group C ATCC 9528 (G+)
Bordetella bronchiseptica (G-)
Bordetella hinzii (G-)
Burkholderia cepacia group (G-)
Citrobacter freundii (G-)
Citrobacter koseri (G-)
Corynebacterium species (G+)
Comanonas testosterone (G-)
Cupriavidus pauculus (G-)
E. coli ATCC 25922 (G-)
E. coli ATCC 35218 (G-)
Enterobacter aerogenes (3) (G-)
Enterobacter cloacae (2) ATCC 7300323 (G-)
Enterococci species (2) (G+)
Enterococcus faecalis ATCC 29212 (G+)
Enterococcus faecalis ATCC 51299 (G+)
Gardnerella vaginalis (Gram variable)
Klebsiella oxytoca (3) (G-)
Klebsiella pneumoniae ATCC 700603 (G-)
Lactobacillus casei ATCC 393 (G+)
Moraxella Group (G-)
MARCoNS (24 including 6 BF 3+ and 10 controls) (G+)
Methicillin Resistant Staph aureus (MRSA) (3) (G+)
Pantoea agglomerans (2) (G-)
Paracoccus yeei (G-)
Pseudomonas aeruginosa (G-)
Pseudomonas aeruginosa ATCC 27853 (G-)
Pseudomonas flourescens (2) (G-)
Pseudomonas luteola (G-)

Proteus mirabilis (G-)
Providencia stuartii (G-)
Rosemonas gilardii (G-)
Rhizobium radiobacter (G-)
Serratia marcescens (G-)
Shewanella putrefaciens (G-)
Sphingomonas paucimobilis (G-)
Staph aureus (4) (G+)
Staph aureus ATCC 29212 (G+)
Staph aureus ATCC 29213 (G+)
Staph aureus ATCC BAA1026 (G+)
Staph aureus ATCC BAA976 (G+)
Staph aureus ATCC BAA977 (G+)
Staph Coag Negative (4) (G+)
Staph epidermidis ATCC 12228 MARCoNS + BF Neg (5) (G+)
Staph epidermidis ATCC 35984 MARCoNS + BF 3+ (5) (G+)
Staph saprophyticus ATCC 15305 (G+)
Stenotrophomonas maltophilia (G-)
Stenotrophomonas maltophilia ATCC 17666 (G-)

Total # of G+ and G- cultures = 98
# of runs = 12
# of MARCoNS positive Staph epi cultures tested = 5 BF+ and 5 BF-
Total # of MARCoNS positive tested including 6 BF 3+ and 10 controls = 24
# of specimens tested = 98
# of ATCC cultures tested = 20
# of G+ cultures tested = 54
# of G- cultures tested = 44
# of different G+ tested = 25
# of different G- tested = 33

Appendix II

Mold and Yeast

Mold:
Alternaria species (2)
Aspergillus glacus
Aspergillus niger ATCC 16404
Bipolaris species
Cephalosporium (2)
Chrysosporium species (5)
Cladosporium species
Epicoccum species (2)
Monilia sitophila (2)
Mucor species (2)
Microsporum canis ATCC 11621
Penicillium species (6)
Pulllularia pullulans (3)
Trichophyton mentagrophytes ATCC 9533
Trichophyton rubrum

Yeast:
Candida albicans ATCC 14053
Candida famata
Candida krusei
Candida guilliermondii
Candida parapsilosis
Cryptococcus albidus
Cryptococcus laurentii
Hortaea werneckii (2)
Rhodotorula mucilaginosa
Stephanoascus ciferri

Total # of fungal cultures = 42
# of runs = 3
# of specimens tested = 42
# of ATCC cultures tested = 4
# of molds tested = 31
# of yeasts tested = 11
# of different molds tested = 13
# of different yeast tested = 5