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A Preferred Clinical Case Report on the use of Phytoantiseptics to Treat a 5-Year-Old Diabetic Foot Ulcers Resistant to All Available Antibiotics and Antiseptics in Cameroon-Sub Saharan Africa

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1. Abstract

1.1. Background: Diabetic foot ulcers are therapeutically and clinically difficult to manage, treat and cure in hospitals in Sub Saharan Africa. Topical treatment response is generally dependent on the level of glycemia and as the blood sugar level decreases, it generally observed that the ulcer dries up with less sepsis and vice versa. With increasing antibiotic resistance and widespread nosocomial infectious pathogenic strains, diabetic foot ulcer is becoming a clinical feat.

1.2. AIM of this Clinical Observation: This clinical case report details 10 patients presenting with diabetic foot ulcer who were regularly being treated for diabetes for ≥ 5 years. The medication documented were Daonil, Metformin, Glucophage and insulin, locally, available and prescribed by physicians in Cameroon.

1.3. Inclusion and Exclusion Criteria: None of the patients in this clinical observation had been on any herbal medications for diabetes nor any herbal antiseptics for cleaning of the foot ulcers or debridement, exclusion criteria, while for inclusion criteria, only patients with diabetic ulcer being treated for 5 years and above. The 10 patients selected had been on treatment ≥ 5 years and have not been noticing any significant treatment benefits.

The antibiotics administered for the ulcer treatment gathered were one or two of the following; Bacitracin powder, Doxycycline, Ampicillin, Cloxacillin, Gentamicin injection, Erythromycin, Ciprofloxacin and Extencilline injection. For all of the patients, Bacitracin powder and penicillin ointments were used at some point in time. While antiseptics used for topical cleaning and debridement were Dettol, methylated spirit and hydrogen peroxide as well as iodine and crystal violet in certain circumstances.

2. Observation

Despite antibiogram sensations tests run at various hospitals in the North West Regions and South West Regions of Cameroon, Central Africa. The antibiotics usually selected by the Physicians partly based on indications and prescriptions from British Pharmacopia and local laboratory antibiotic sensitivity tests performed in situ, ex vivo healing responses only lasted temporarily and the wound/ulcer persistence triggered sepsis with no significant astringent and skin healing observed. At Phytobiotechnology Research Clinics and Laboratories in collaboration with Imo State University in Nigeria and the Institute for Biophytomedicine and Physiatry in Nigeria, after consents from these selected patients willing to adopt alternative and complementary therapies, we collected swabs from the ulcers following standard operational procedures cultured the specimens on a range of agars; blood, nutrient and mannitol salt agars. Following due microbiological; as systematically ascribed in Bergeys Manual of Determinative Bacteriology as presumptive of the isolates. Further, traditional biochemical built on metabolic needs and bioenergetics-based tests were performed out and specific to the isolates; catalase, coagulase, lactose fermentation based and referrals to keys in Bergey manual were used to transit from presumptive identity to substantive identity. Further molecular biotechnological tools applied. The isolates were further confirmed

using DNA extraction, PCR performed targeting staphylococcus aureus PCR (Polymerase Chain Reaction): Perform PCR targeting Staphylococcus aureus-specific genes, such as: - nuc gene (thermonuclease) - femA gene (femA protein) - coa gene (coagulase) - 16S rRNA gene - mecA gene (methicillin resistance), and access to the NCBI website and referral to the "Nucleotide" database to further gain insight on the strain, since staphylococcus aureus was isolated from swabs from the 8 patients with highest occurrence. We observed that and with 8 of the patients we isolated Acinetobacter spp, Pseudomonas aeruginosa and proteus mirabilis with less occurrence as staphylococcus aureus. The clinical epistemic design here was non-epidemiologic but a co -therapeutic logic frame work integrating alternative therapies. We subjected the isolates to commonly used antibiotics that has been used in treating them in the last five-year period and antiseptics used already in cleaning the wounds (topically) viz: ciprofloxacin, gentamicin, cloxacillin, Doxycycline was identified as common amongst the 1o patients recruited as cohorts in this study and hydrogen peroxide and methylated spirit used as antiseptics, topically in the last five years.

2.1. The findings in vitro suggested that

1.Methylated spirit and hydrogen peroxide an inhibition that didn't last as the organisms re-grew after 24 hours on the spots with methylated spirit and hydrogen peroxide.

2.Multidrug resistant was presumed when no inhibiting zone was observed where the antibiotics were placed on the spots with containing each of the organisms in their respective plates in triplicates.

3.Inoculums were taken from the non-inhibitory zones around the antibiotic discs and re-cultured plates with growths were tested using agar well diffusion using Mueller Hinton agar using extracts/organic of the Occimum gratissimum derived using ethanol extraction in 24 hours. The ethanol was evaporated using a rotary evaporator and water bath after 72 hours. The extracts were then reconstituted in sterile distilled water and used topically for cleaning, dressing and debridement.

4.After 18 days of daily dressing and cleaning of the wound using the extracts, the wounds dried up. This was observed for all the ten patients including those 2 patients whose swabs, had no bacterial isolate after culture.

3. In conclusion

Organic antiseptics formulated from Occimum gratissimum demonstrated wound healing potential ex vivo as well as in vitro antibacterial activity on bacterial isolates from diabetic foot ulcer that showed in vitro antibiotic resistance to Doxycycline, Ampicillin, Cloxacillin, Gentamicin, Erythromycin, and Ciprofloxacin and as well as performed as antiseptic better than mylated spirit and hydrogen peroxide.

4. In Recommendation

It can thus be concluded that organic antiseptics (phytoantispetics) can complement the current treatment of diabetic foot ulcers in Africa. It is recommended for use at primary health care facilities in Africa, considering that a lot of literature supports the safety, efficacy and availability of Occimum gratissimum.