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CUTANEOUS LEISHMANIA RECURRENCES (LUPOID, SPOROTRICHOID) IN AFGHANISTAN TREATED WITH 0.045% DAC N-055, CASE REPORTS

Waisenmedizin (WM e.V.) – PACEM
Promoting Access to Care with Essential Medicine

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INTRODUCTION

Cutaneous leishmaniasis (CL) is a widespread parasitic ulcer skin disease in the Middle East caused mainly by two species of Leishmania, ***L. tropica*** and ***L. major***, transmitted by female phlebotomus sandflies.

CL is endemic in Afghanistan where its prevalence is higher than in neighbouring Iran and Pakistan due to a poor population living under poor hygienic conditions with poor public health care awareness. CL has responded well with good cosmetic results to the expensive photodynamic therapy with $^1O_2$ as final active principle in Iran [F. Ghaffarifar et al. La Rev. de la Méditerranée orientale Vol.12 No.6, 2006].

Photodynamic therapy (PDT) needs accessories, an expensive medication (10% delta-aminolevulinic acid (ALA) in a water-in-oil emulsion) and an infrared lamp. This hampers field use of PDT to treat CL.

Lupoid leishmaniasis (LCL) = tuberculoid L. is a rare, mostly the face disfiguring relapse of L. tropica (anthroponotic) CL with a strong cell-mediated inappropriate host immune response, a slow peripheral progression and a diffuse reaction, which is treatment resistant.

METHODS AND PATIENTS

From 2004 – 2009, 5 LCL patients visited the Leishmania Centre of the Balkh Civil Hospital of Mazar. Their diagnoses was based on clinical symptoms and a CL history, as parasites are scarce in LCL lesions and LCL Giemsa smears are negative.

Basic crème [German Drug Codex, DAC B-020] with 0.09% pharmaceutical chlorite [DAC N-055] adjusted to pH 8 with acetic acid (**0.09% $NaClO_2$/BC**) was prepared with an unguator purchased from GAKO [http://www.unguator.com/].

During the first 7 days the CL lesions were treated daily with topical $NaClO_2$/BC under occlusive dressings in the centre. Then the patients applied 0.09% $NaClO_2$/BC themselves 2x/day without any dressing till final healing.

After exposure to UV-A (320-400 nm, an intensive amount of Afghan day light) pharmaceutical chlorite is supposed to release $^1O_2$ and reacts as chlorite in iodometry.

Sporotrichoid cutaneous leishmaniasis is due to dissemination of amastigotes via the lymphatics to the subcutaneous tissues. Sporotrichoid CL is dressed non-occlusive only in the clinic.

Dressing with 0.045% Na-chlorosum [DAC N-05] in Basic creme [DAC B-020]

If treated with $Sb^{(V)}$ sporotrichoid CL the drug has to be administered systemically (i.m.)

LCL case 1

RESULTS with 0,045 % Na-chlorosum

Lupoid CL responds extremely well to pharmaceutical $NaClO_2$/BC in basic creme (with excellent cosmetic results. This medication is cheaper than $Sb^{(V)}$ drugs.

LCL case 2

LCL case 3 (lost on 3rd day) already after 2 days, occlusive $NaClO_2$/BC had a visible anti-inflammatory effect

The sporotrichoid CL case responded within 3 weeks without antbiotics without systemic $Sb^{(V)}$ which has severe side effects at higher doses (cardiotoxicity, nephrotoxicity, liver enzyme elevations, arthralgia, myalgia, and pancreatitis)

LCL case 4

Relapse after Sb inj. into nasal CL lesion
0.9% Na-chlorosum basic crème treatment for 4 weeks

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DISCUSSION

- **The lupoid CL cases responded well to $NaClO_2$/BC (occlusive dressings for the 1st week) within weeks and with excellent cosmetic results. Case 5 developed an eczema and needed additional intermittent treatment with cortisone. $NaClO_2$/BC reverses the negative cortisone effect on wound healing.**
- **So far, sporotrichoid CL is treated with systemic $Sb^{(V)}$ [20 mg/kg i.m. for 20 days]. Systemic $Sb^{(V)}$ may show the following side effects: cardiotoxicity, nephrotoxicity, liver enzyme elavations, local pain, arthalgia, myalgia, pancreatitis.**
- **Topical $NaClO_2$/BC has none of the $Sb^{(V)}$ side effects and is cheaper than systemic $Sb^{(V)}$ treatment. The rapid response to $NaClO_2$/BC should be further explored especially in countries with frequent sporotrichoid CL (Sudan and Saudi Arabia with 23% and 10% of patients with L. major respectively).**
- **Topical $NaClO_2$/BC is cheaper than systemic $Sb^{(V)}$.**

LCL Case 5 (with eczema)

Treatment lasted for more than 15 months. The patient developped an eczema treated intermittently with cortisone

It could be shown that Na-chlorosum reverses the effect of cortisone on wound healing [Plast-Reconstr-Surg. 1989 Dec; 84(6): 953-9]

Treatment start on 19.07.2008

LCL case 6

Sporotrichoïd relapse healed in 3 weeks

CONCLUSION

Peroxy-dichlorate in Na-chlorosum has 3 chemical pathways. Pathways (1) and (3) fight infection (1) and stimulate tissue regeneration (3), in combination with the high UV light intensity in Afghanistan pathway 2 may be a cheap alternative to PDT.

(1) $^-{}_2OCl^{(IV)}OO^{(IV)}ClO_2^- + \mathbf{2H^+} \rightarrow H_2O_2 + 2\,ClO_2$; (pH<6)

(2) $^-{}_2OCl^{(IV)}OO^{(IV)}ClO_2^- + \mathbf{h\bullet v} \rightarrow {}^1O_2 + 2\,ClO_2^-$; (366 nm)

(3) $2\,ClO_2^- + 2\,Hb\text{-}Fe^{2+} \rightarrow 2\,Hb\text{-}Fe^{3+}O^- + 2\,{}^-OCl$; (pH 7.4)
$^-{}_2OCl^{(IV)}OO^{(IV)}ClO_2^- + Hb\text{-}Fe^{3+} \rightarrow ClO_3^- + ClO_2^- + {}^{\bullet+}Hb\text{-}Fe^{(IV)}{=}O$

$^{\bullet+}Hb\text{-}Fe^{(IV)}{=}O$: heme–$Fe^{(IV)}$–O porphyrin π-cation radical ($^{\bullet+}PorFe^{(IV)}{=}O$)