Bacterial dermohypodermatitis of voluntary depigmentation in Djibouti

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ABSTRACT
Voluntary depigmentation is a common practice in Djibouti. This practice can cause dermatological complications including, erysipelas. The objective of this study was to evaluate erysipelas or superficial bacterial dermohypodermatitis in hospitals. This is a retrospective study conducted at the Polyclavalent Medicine Service of the Peltier Hospital in Djibouti. The study population consisted of all patients hospitalized in the department for bacterial dermohypodermatitis. Pus samples were collected from patients over a period of two-year from 2020 to 2022 at Peltier Hospital. Of 230 patients hospitalized during the study period, we analyzed 155 (67 %) patients who satisfied the study inclusion criteria. All patients were women (100 %). The average age was 39 ± 4 years. The major pathogens of bacterial dermohypodermatitis were Staphylococcus aureus (63 %) and Staphylococcus epidermidis (37 %). In this study, only gram-positive cocci were found to be responsible. Thus, gentamicin, augmentin, and ceftriaxone drugs were chosen to treat bacterial dermohypodermatitis at the Peltier Hospital. The outcome was favourable in 137 patients (88 %). Progression to a necrotizing type was reported in 18 patients (12 %). Voluntary depigmentation has become a major risk factor. Women need to be educated about the harmful effects associated with this practice, and strong measures must be taken to withdraw depigmenting cosmetic products from the local market.

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1. Introduction:
Voluntary depigmentation consists of lightening the natural colour of your skin, with the risk of medical complications. This practice aims to reduce the physiological melanin pigmentation of the skin [1]. The motivation is generally aesthetic; people feel their skin is more beautiful when it is lighter [1-2]. This phenomenon mainly affects women. The pharmaceutical industry has developed cortisone derivatives that can be used in the skin to treat certain skin diseases, called topical corticosteroids. These drugs are responsible for skin depigmentation. Four main types of products are mainly used in this practice of voluntary depigmentation: hydroquinone, topical corticosteroids, mercury derivatives, and caustics [1-3]. The use of these products, alone or in combination, over many years and on large body surfaces, exposes you to dermatological and systemic complications [1]. Erysipelas or superficial bacterial dermohypodermatitis is a multifactorial infection in which voluntary cosmetic depigmentation is currently considered one of the risk factors in urban areas [1,4-5]. Its topographic form called the erysipelas of the leg, with a large feverish red leg often progresses to suppuration, deep necrosis, and then ulceration (necrotizing fasciitis) [1-4]. The objective of this work is to investigate the bacterial dermohypodermatitis of voluntary depigmentation diagnosed in a hospital setting.

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2. Materials and methods:
This is a retrospective study conducted at the Polyvalent Medicine Service of the Peltier Hospital in Djibouti. The study population consisted of all patients hospitalized in the department for bacterial dermohypodermatitis (DHB). Patients were over 17 of age. Free and informed verbal consent was obtained from the patients before their inclusion in the study. The patients’ pus samples were collected over a period of two-year from 2020 to 2022 at the Peltier Hospital. Out of 230 patients hospitalized during the study period, 155 (67%) patients who met the study inclusion criteria were analyzed. The study focused on patients with bacterial dermohypodermatitis patients with ulceration, and with at least two local clinical signs of infection (induration, redness, pain, heat, or suppuration) who were admitted to the unit.

The bacterial strains were identified and antimicrobial susceptibility testing of the isolates was performed using the Kirby Bauer disc diffusion method. This study was carried out on samples for diagnostic purposes. Identification of the isolated bacteria was based on the morphological, cultural, and biochemical characteristics using the API20E®, APINE®, API STAPH® strips (BioMérieux, France), VITEK® cards (BioMérieux, France), and the coagulase test. The antibiogram was performed by the diffusion method on solid medium, on Mueller-Hinton agar (MH) for non-fastidious bacteria, and on MH supplemented with 5% sheep blood (MH-S) and MH supplemented with 5% horse blood and 20 mg/l β-NAD (MH-F) for fastidious bacteria. BioMérieux Analytical Profile Index panels were used for microbial identification [6-7]. Methicillin-resistant *Staphylococcus aureus* or MRSA was detected by the Oxacillin disc diffusion method [8]. Isolates were considered methicillin-resistant if the inhibition zone was less than 10 mm.

3. Results and discussion:
Among 230 patients hospitalized during the study period, we analyzed 155 (67%) patients who satisfied the study inclusion criteria. All patients were females (100%). The average age was 39 ± 4 years (average ± SD) with extremes ranging from 23 years to 58 years. Patients had the following complications: pigmented disorders (81%), acne (54%), trophic disorders (29%), infections (36%), allergic accidents (17%), and dermatitis (8%). Fever was present on admission in 143 patients (92%).

The intensive use of depigmenting agents is based on the artisanal mixing of several tubes of level 4 topical corticosteroid cream in a jar of hydroquinone-containing body milk [1-2]. Erysipelas is a superficial inflammatory swelling. It can be complicated by a severe deep suppurrative process with necrosis and necrotic ulceration, making it a real public health problem [1,4]. Erysipelas is the superficial form of a group of non-suppurative acute skin infections that reach the dermis and the hypodermis and involve the lymphatic vessels: it is a non-necrotizing superficial bacterial dermohypodermatitis. Necrotizing bacterial dermohypodermatitis is associated with necrosis without the involvement of superficial aponeurosis. Necrotizing fascist is associated with necrosis with damage to the superficial aponeurosis and/or the superficial fascia, which may extend to the muscles and result in ulceration and significant tissue loss [1-4].

Table 1 shows the main pathogens responsible for bacterial dermohypodermatitis in hospitalized patients at the Peltier Hospital.

<table>
<thead>
<tr>
<th>Bacteria isolated</th>
<th>N°</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>98</td>
<td>63</td>
</tr>
<tr>
<td><em>Staphylococcus epidermidis</em></td>
<td>57</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>155</td>
<td>100</td>
</tr>
</tbody>
</table>

As shown in the table 1, the most common pathogens in bacterial dermohypodermatis were *Staphylococcus aureus* (63%) and *Staphylococcus epidermidis* (37%). In this study, only gram-positive cocci were found to be responsible. Thus, gentamicin, augmentin, and ceftriaxone were the drugs of choice for the treatment of bacterial dermohypodermatitis at the Peltier Hospital, in doses appropriate for renal failure. The parenteral route is still the most common way of administering anti-infectives in the hospital.

Methicillin resistance was observed in *Staphylococcus epidermidis* (17%), and *Staphylococcus aureus* (38%) isolates. Therefore, *Staphylococcus aureus* has several virulence factors that help to destroy host cells and thus increase the risk of infection. In our study, MRSA strains were resistant to gentamicin (34%). The outcome was favorable in 137 patients (88%). Progression to a necrotizing form was reported in 18 patients (12%).

Therefore, factors that help to reduce the rate of MRSA are the regular monitoring of antibiotic resistance in *Staphylococcus* strains, the application of hygiene measures, and the education of healthcare personnel, especially regarding hand washing. Analysis of the factors that may explain the occurrence of serious infections in the patients considered risk factors has been identified, the immunocompromised state of the patients, diabetes, virulence, and resistance of the organisms, cardiovascular diseases, and delay in the introduction of antibiotic therapy [1-4]. Some medicinal plants can be used for these infections [9-18].
4. Conclusion:
Voluntary depigmentation is very common in women. It is a major risk factor for erysipelas, which is curable with good medical care in a hospital environment. In this study, only gram-positive cocci were found to be responsible. Therefore, gentamicin, augmentin, and ceftriaxone were the drugs chosen to treat bacterial dermohypodermitis at the Peltier Hospital. Women need to be educated about the harmful effects of this practice, and strong measures must be taken to withdraw depigmenting cosmetics products from the local market.

References:

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