



A PROSPECTIVE STUDY / CASE SERIES ON LOCAL - NON-INFECTIOUS ETIOLOGY FOR CUTANEOUS NECROSIS

Dermatology

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ABSTRACT

Background: Cutaneous necrosis has a spectrum of causative agents, commonly found in the daily use / over the counter chemicals which need to be understood by clinicians and common man alike. **Aim:** Case series to signify non-infectious local aetiology for cutaneous necrosis due misuse of indigenous chemicals for the awareness **Results:** Study shows wide variety of common topical causative agents (phenol, salicylic acid, podophyllin, bleach, corn plast, ayurvedic topical preparations) with adverse effects like cutaneous necrosis in the aetiopathogenesis **Conclusion:** Early diagnosis and management of sudden necrosis of skin could likely manifest, therefore clear and present danger of chemical agents without medical guidance should be avoided, leading to unprecedented morbidity, as simple skin test for sensitivity has to be performed prior to such use by the medical fraternity and the common man alike, as a small prevention or a consultation would actually save the patients larger monetary loss as compared to the small amount he/she puts into finding a cheap treatment / alternative medication.

KEYWORDS

Cutaneous necrosis; phenol; salicylic acid; podophyllin; bleach; corn plast; ayurvedic topical preparations

INTRODUCTION

In necrosis cell death occurs because of adverse conditions or changes in the cell's environment. Thus, necrosis can be viewed as the consequence of a "biological accident" that leads to the death of an "innocent victim" (Rosser and Gores 1995) [1]. Common causes of acute cutaneous necrosis: warfarin-induced skin necrosis [2], heparin-induced skin necrosis [3], calciphylaxis, pyoderma gangrenosum, embolic phenomena, purpura fulminans, brown recluse spider bite, necrotising fasciitis, ecthyma gangrenosum, antiphospholipid syndrome [4], hypergammaglobulinemia, and cryoglobulinemia.

AIM

This review is to recognize the non-serious pathologies and complications after application of chemicals allowing for prompt diagnosis of localised non-infectious cutaneous necrosis and their management.

METHODOLOGY

Patients were selected Department of Dermatology out - patient clinics of Shadan Institute of Medical Sciences, Teaching Hospital and Research Centre attached to Shadan Institute of Medical Sciences with the permission from institutional ethical committee, the study was carried out.

Case 1 - A female patient of 24 years housewife had severe T. Cruris for many years. Tried all the types of anti-fungal treatment and the topical corticosteroids later she was advised by Rpm's after applying salactin paint she got extensive painful cutaneous necrosis. She was advised to have debridement and skin flap repair. The patient was kept on conventional anti-fungal treatment.

Case 2 - A 60-year male security guard patient who had sun exposure for the whole day had developed redness. He applied topical ayurvedic medication (unknown) once and developed localized necrosis. Pt was advised copper oxide induced localized debridement with emollients and counselled.

Case 3- A male patient of 28 years old student tried uttam massa nashak oil for removal of DPN (dermatosis papulosa Nigra) and got sudden, localized nonpainful cutaneous skin necrosis at the site of application. Pt was taken for localized debridement and septic care was given by topical mupirocin ointment.

Case 4- A 60 years old female patient with generalized vitiligo Had frictional intertrigo for one month on & off DM, hypothyroidism. Pt applied podophyllin paint as suggested by their neighbours. She had extensive skin necrosis along with fever pain. Patient was kept on systemic antibiotics along with debridement. Patient had a good improvement lesion healed with atrophic scarring.

Case 5- 22 years old nondiabetic pregnant female had sudden hyperpigmentation in front of skin for 2 months she developed peau

D'orange appearance. Pt was diagnosed as necrobiosis lipoidica for which she used corn caps and developed necrosis. She was treated with topical emollients, topical antibiotics. the patient had responded well and kept following up.

Case 6- A 30-year-old chemistry student was experimenting with phenol solution she developed sudden spillage on her lower limbs and got sudden cutaneous necrosis with blisters and pain She was given systemic steroids, antibiotics, emollients and rejuvenating creams.pt was lost for follow up

Case 7-A 42 yr old labourer was using bleaching water for cleaning the water tank.he had sudden spillage all over his face ,next day he had diffuse necrosis with secondary impetigo.patient was advised emollient

DISCUSSION

Infarct is defined as Ischemia of tissue [1]

- Colour can vary from Gray-white to purple to black. Aetiology can vary from [1] Antiphospholipid syndrome Can be due to vascular compromise (e.g. Atherosclerosis, calciphylaxis), thrombosis. Black Necrosis secondary to vasculopathy from [2] levamisole-contaminated cocaine
- Necrosis of the skin due to:
 - Vasculitis (granulomatosis with polyangiitis)
 - Thrombosis (e.g., DIC, monoclonal cryoglobulinemia)
 - Emboli (e.g., ecthyma gangrenosum)
 - Vasospasm (e.g., severe Raynaud phenomenon)
 - Vascular compromise (e.g., atherosclerosis, calciphylaxis)
- Eschar (e.g., anthrax)
- Cutaneous melanoma

Traumatic tattoos (e.g., asphalt) vasculitis, emboli (infectious or non-infectious) dicumarol-induced skin lesions [5]. Histopathological findings in A) Early necrosis with tiny bullae and contiguous redness, surrounded by a reddish-brown halo, healed completely with conservative care. B) Fully developed necrosis with large bullae needed debridement but ultimately healed, leaving a scarred soft-tissue defect. Those specimens have shown infarction of the skin and subcutaneous tissue with thrombi in the capillaries, venules, and small veins [6]. Vascular inflammation and arterial involvement are routinely absent [7]. Curiously, some of these specimens have shown islands of normal tissue within zones of frank gangrene [7] Salicylic Acid has keratolytic property. it brings about lyses i.e., breakdown of keratin layer. Lactic Acid enhances availability of Salicylic Acid from the dried collodion by helping to break down the surface of the skin [8]. This ayurvedic fairness creams cream for the face contains ingredients as saffron that have antibacterial, anti-inflammatory, and antioxidant properties[9][10]. Uttam Massa Nashak contains major ingredients as turmeric (Curcuma longa), CHUNA (quicklime- calcium oxide), and MANJISTHA (Rubia cordifolia).[12] (Curcuma longa). In India, turmeric is used as spices as well as a colouring agent[11]. It is having

various medicinal properties as anti-cancer, antidiabetic, antioxidant, anti-inflammatory, antibacterial, antiviral, wound healing [13]. *Rubia cordifolia* represents the pivotal plant resource belonging to traditional Chinese medicine and Indian Ayurveda.[13] It synthesizes biocompatible copper oxide nanoparticles (CuONP's) using *R. cordifolia* bark extracts, characterize the incumbent chemical transitions, and explore their biomedical and environmental application[13] The apparent induction of autolytic debridement by the COD.[11] This can be attributed to autolytic enzymes, such as matrix metalloproteinases, released by the granulation tissue being formed. Copper stimulates the expression and secretion of matrix metalloproteinase-1 by dermal fibroblasts, a collagenase that degrades interstitial collagen [10]. Copper induced the upregulation of fibroblast growth factors secretion in full thickness wounds [9]. Thus, the increased number of dermal fibroblasts and blood cells in the newly formed granulation tissue, together with the increased secretion of collagenases by the fibroblasts and possibly by the white blood cells. Podophyllin cells – Bizarre, enlarged epithelial cells with a clumped pyknotic nucleus, seen after the application of podophyllin to normal skin,[15] verruca vulgaris, and condyloma acuminata[16]. There is no cellular atypia [17],[14]. The time the corn plaster needs to be adhered to the corn has also been investigated and a seven-day application has been shown to produce the highest number of corn removals [18]. Corn plaster group had a corn plaster applied to each corn (up to three corns per person) by the podiatrist and appropriate dressings applied if necessary to keep the plasters in place. The plasters contain 40% salicylic [19]. Phenol is a highly toxic compound causing protein degradation and tissue erosion[20]. Phenol is a flammable, highly corrosive chemical with a sickeningly sweet, acrid odour. Phenol's odour generally provides adequate warning of hazardous concentrations.[21] LIQUID CHLORINE BLEACH: A solution of sodium hypochlorite, a highly active oxidizing agent. Liquid chlorine bleach is also called household bleach or simply liquid bleach, and is commonly distributed as an approximately 5% solution of sodium hypochlorite[22]



Case 1



Case 2



Case 3



Case 4



Case 5



Case 6



Case 7

CONCLUSION

Acute cutaneous necrosis is characterised by a wide range of aetiologies and is associated with significant morbidity and mortality, warranting complex considerations in management. Early diagnosis and management of sudden necrosis of skin could likely manifest, therefore clear and present danger of chemical agents with out medical guidance should be avoided, leading to unprecedented morbidity, as simple skin test for sensitivity has to be performed prior to such use by the medical fraternity and the common man alike, as a small prevention or a consultation would actually save the patients larger monetary loss as compared to the small amount he/she puts into finding a cheap treatment/ alternative medication.

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