POST-BURN PRURITUS: NEED FOR STANDARDIZATION OF CARE IN NIGERIA

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SUMMARY. It is generally agreed among burn care specialists that pruritus (itching) is a very common and distressing complication of burn injuries that results in extreme discomfort. There is no consensus on treatment modality worldwide but there are generally accepted methods of managing amelioration. This survey aims to study the knowledge, attitudes and practices of Nigerian burn specialists who manage various degrees of burn injuries in our environment. The purpose is to find out whether there are any uniform modalities of care for these patients, with the view of possibly providing standardization. To this end, a structured questionnaire was designed and distributed to plastic surgeons from across Nigeria. Findings showed that 88.6% of the plastic surgeons had no form of assessment tool or method for evaluating post-burn pruritus, leaving only 11.4% believing they had a method of assessing the severity of post-burn pruritus. With regard to treatment, 57.1% would use oral medications as first-line treatment, 22.9% would use injectables, 8.6% would use topical agents, 5.7% would only reassure the patients and another 5.7% would use a combination of oral and topical agents together. 85.7% of these plastic surgeons and burn care specialists did not have any form of anti-pruritic regimen, as only 14.3% indicated having this. Hence, there is no standardization in the management of pruritus in Nigeria and there is an urgent need for a management protocol.

Keywords: post-burn pruritus, standardization, care

Introduction

Pruritus has been described as an unpleasant cutaneous sensation associated with the immediate desire to scratch. 1

Post-burn pruritus is frequently encountered by Nigerian burn specialists. The average Nigerian burn specialist is often a general plastic surgeon serving a wide berth of a heavily-populated country. Dermatologists, who may share in (or more often shun) the care of such patients, are perhaps just as thinly spread. The various methods employed in caring for these patients are known to yield variable results. 2 This study seeks to determine the level of awareness of this complication among the burn specialists and, in consequence, the level of preparedness of these care givers to adequately tackle the ailment. The successful treatment of post-burn pruritus should be a priority in the rehabilitation of all burn patients. 2 This study also hopes to answer the question of the existence or otherwise of a uniform care protocol and establish a necessity base for the possible standardization of care of post-burn pruritus in Nigeria.

Materials and methods

A structured questionnaire was designed in a similar format to one used in a study on ‘Burns pruritus: A study of current practices in the UK’ by I. Goutos. 3 It was distributed, completed and collected at the joint scientific conferences and annual general meetings (AGM) of the Nigerian Association of Plastic, Reconstructive and Aesthetic Surgeons and the Nigerian Burns Society. This annual 5-day event is open to all burn care plastic surgeons in Nigeria, as well as to other relevant professionals.

At the time of the survey, there were little over seventy registered plastic surgeons in Nigeria, a sizeable number of whom were expected at the meeting. However, less than 50 plastic surgeons were present at the meeting, and only 35 of them completed and returned the questionnaires. Questionnaires were distributed only to those who gave their consent. Verbal consent was obtained first after an explanation of the essence of the study to each of them.

The data provided in the completed questionnaires was analyzed using SPSS package version 17.0.

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Results

Of the respondents, 29 (82.9%) were male and 6 (17.1%) were female, which is a fair reflection of the male to female ratio for plastic surgeons in Nigeria. Nigeria is divided into 6 geo-political zones, all of which were represented as follows: 34.4% of respondents were from south-east, 8.7% from south-south, 28.6% from south-west, 5.8% from north-east, 11.5% from north-central, 5.8% from north-west, while 5.7% did not indicate their location of practice.

Most respondents were actively managing victims of post-burn pruritus, with 51.4% claiming to see such patients very often and another 40% seeing them often. No surgeons stated they were not managing post-burn patients (Fig. 1). With regards to the time of the day during which itching is most pronounced, the majority of respondents (54.3%) believed it was at night, 28.6% believed it was in the afternoon, only 2.9% felt it was not dependent on time of day, and 14.3% were unable to answer.

In response to the question of whether they believed post-burn itching occurred more among children or in adults, 34.3% of the plastic surgeons believed it was more common in children, 25.7% believed it was more common in adults, while 25.7% believed there was no difference, and 14.3% were unable to answer. A massive 88.6% of the plastic surgeons had no form of assessment tool or method for evaluating the severity of post-burn pruritus. The 11.4% who believed they had a form of assessment provided vague methods, such as clinical observation of the patient and asking the patient to describe the severity of itching.

As regards the types of burns which resulted in the greatest levels of pruritus, most plastic surgeons (37.1%) suggested deep dermal burns, 20% suggested partial thickness burn wounds, 17.1% stated full thickness burn wounds, 11.4% felt that both full thickness and deep dermal burns caused the most itching, 2.9% believed it was both partial thickness and deep dermal burns, and unfortunately 11.4% of them were unable to answer. Interestingly, 85.7% of the respondents agreed that conservatively treated burn wounds resulted in more post-burn pruritus than skin grafted wounds, 8.6% felt there was no difference in frequency or severity of pruritus following burn injuries, and 5.7% of them were unable to answer.

With regard to treatment methods, 57.1% would use oral medications as first-line treatment, 22.9% would use injectables, 8.6% believed they would use topical agents, 5.7% would only reassure the patients, and another 5.7% would use a combination of oral and topical agents together. For first-line oral medication, almost all the respondents (97.1%) would only use anti-histamines, while 2.9% would not use any agent. The use of adjuncts in treatment is well established and most of the plastic surgeons in the survey (62.9%) would rather use a combination of the common methods, such as psychological support, silicone therapy and massage. However, 11.4% would use either psychological support, silicone therapy or massage alone, while 2.9% would use other unspecified adjuncts. For patients not relieved by first-line treatment, 34.3% of the plastic surgeons favoured the use of other anti-histamines as second-line agents, 42.9% would rather not use any other medication, 14.3% would use gabapentin, and 8.6% would use other unspecified methods of treatment.

Surprisingly, 85.7% of these plastic surgeons and burn care specialists did not have any form of anti-pruritic regimen, with only 14.3% indicating that they did. In actual fact, virtually none of the respondents had a reproducible anti-pruritic regimen. Should medication fail, 42.9% of the surgeons would only reassure the patients, 17.1% would use a combination of adjuncts, 8.6% would combine adjuncts and injections, 2.9% would use injections only, and 28.6% of them were unable to answer. Injections used are mainly anti-histamines such as promethazine and chlorpheniramine, while the topical agents used are mainly antihistamines such as 2% Mepyramine maleate and steroid creams, including hydrocortisone and triamcinolone acetonide.

Discussion

A plethora of agents, pharmacologic and non-pharmacologic alike, have been employed, with varying results to ameliorate pruritus in post-burn patients. Common predictors of pruritus following burn injuries include total body surface area (TBSA) burns of over 40% and delayed wound healing of up to three weeks.
Nursing staff in North American burn centers opined that nocturnal incidence of pruritus was significantly greater than diurnal, with the leg being more affected than the arm and the face.\(^1\) This opinion was shared by roughly half of our respondents, while nearly a third stated that there was greater incidence in the afternoon. This difference may be related to the increased tendency to itch under hot humid conditions, which are generally found in Nigeria and not in North America. It has been posited, however, that the decrease in painful impulses (associated with daytime dressing changes and physical treatments) in the evenings possibly make pruritic symptoms more likely to register as the predominant sensory modality. Compared with the U.K. study,\(^7\) upon which this study is based, a smaller proportion of our respondents were unable to answer the question (14.3% cf 36.36%). Given that all the respondents in the U.K. study were working in established burn centers,\(^4\) as compared with the Nigerian set-up where burn centers are less present, this inability to answer perhaps reflects the ubiquitous low perception among care givers of this symptom, irrespective of the turnover of exposure to burn patients. Greater emphasis is often given to the care of the primary injury and its more overt complications.

According to a survey, grafted areas of skin, more than non-grafted areas, were likely to elicit paraesthetic (including pruritic) symptoms after 1 year.\(^8\) Scald injuries were noted to produce more pruritic symptoms than flame burns and contact injuries, in a study of pediatric patients.\(^7\) The results of a study of an adult population in a different center showed deep dermal affection to be a strong predictor of pruritic symptoms within the first year,\(^7\) declining into the second year.

The tripartite divide of our respondents regarding which age group is more affected, coupled with the 14.3% unable to answer, suggests a paucity of information in this regard. Whether this is a reflection of a lack of interest in the disorder or a real difference in the experience of the practitioners is unclear. By contrast, in the U.K. study most claimed there was no difference between age groups, with only 4.5% suggesting adults were more affected. Significantly, the lack of any form of assessment tool in the majority of respondents, in both studies, indicates a clear gap in the management of this problem. Though we had a relatively larger proportion, 11.4% cf 4.55%, claiming to have an assessment tool for post-burn pruritus, the said tools were subjective and varied, as opposed to the more objective and uniform ‘itch man scale’ used in the British Isles.

A small number of tools have been used in different centers for assessing pruritus, which have shown varying levels of utility in clinical care. There is, curiously, a widespread reluctance to adopt standardized tools for pruritic assessment in specialized units.\(^7\) Tools that have been used include: descriptive terms, a 1-10 visual analogue scale (VAS), and the ‘itch man scale’. Descriptive terms tend to be as varied as the patients using them, and lack the objectivity necessary for developing reproducible standard protocols.\(^7\) VAS (Fig. 2) is commonly used in nociceptive symptom assessment and is an instrument for measuring subjective characteristics or attitudes that cannot be directly measured.\(^10\) The patient intercepts a horizontal line with a perpendicular mark to rate the intensity of their complaint. They require good patient perceptual skills, which may vary with age, as well as with psychological and cognitive state.\(^4\) VAS scales are accompanied by no descriptive terms except for the two extreme endpoints. The ‘itch man scale’ of Blakeney and Marvin,\(^11\) copyrighted by the Shriners Hospital for Children, is a 5-point Likert scale\(^4\) (Fig. 3) which incorporates descriptive terms to accompany a numerical scale in order to delineate the impact of pruritic symptoms on daily activities.\(^4\) It has been validated in pediatric patients.\(^12\)

Gouton et al. suggest that beyond one year post-injury, grafted wounds show more paraesthetic symptoms than non-grafted wounds.\(^7\) The vast majority of our respondents did not share this view. This may be related to the poor follow-up attitude seen in under-resourced and poorly funded health systems, such as in Nigeria. Thus there is usually no further patient follow-up beyond the first year. However, the referral system, as it currently stands, does not preclude such patients presenting to new physicians (and other practitioners) with complaints of itching at graft sites with little or no reference to the ‘already healed’ burn injury.\(^13\)

The most common treatment for post-burn pruritus has been antihistamine therapy. This is in spite of the fact that none of the many combinations of these drugs gives complete relief to all patients.\(^3, 5, 13\) The H1 subtype of histamine receptor, which is more closely related to pruritic symptoms, has 10 times more affinity for the histamine released following mast cell degranulation.\(^11\) In recent times, H3 receptors\(^7\) (on peripheral and central neurons) and H4 receptors\(^7\) (on mast cells) have been identified, although their contributions to pruritic nociception remain unclear. Histamine is formed as a bi-product of collagen production and its synthesis is known to increase in wound granulation tissue.\(^7\) Hence the significance of this substance in the pruritus of the acute and proliferative phases of burn wound healing.
Other identified mediators of pruritic symptoms are known to involve histamine in producing the effects, or to modulate the release of principal neurotransmitters like calcitonin gene related peptide (CGRP) and Substance P (SP). Bradykinin is thought to induce histamine release by mast cell degranulation while augmenting the release of the key neurotransmitters SP, CGRP and prostaglandin E2. Acetylcholine, vallinoids and proteinases like tryptase, chymase (expressed by dermal mast cells) modulate the local release of neuropeptides, thus producing the nociceptive pruritus. Nearly all our respondents employ oral antihistamines as first line medication for post-burn pruritus, and this preponderance is replicated in many centers globally.\(^3,7\) As regards the pathophysiology of scar pruritus, it is known that pain has an inhibiting effect on itching (the antipruritic effect of scratching). This knowledge has served in demonstrating that pruritus in inflamed skin can be alleviated by specific inhibitors, as outlined above.\(^3,13\)

More recently gabapentin, an antiepileptic drug reportedly effective in treating neuropathic pain, has been shown to be significantly more effective in relieving post burn pruritus than the antihistamine cetirizine.\(^9,13\) This may be related to its effect on the nociceptive processes involving sensitization in the central nervous system.\(^9,13\) It thus targets the central nervous system components where a variety of peripheral pruritic impulses (including those mediated by histamine) converge. However, only a seventh of our respondents use gabapentin for treating post-burn pruritus, and even then only as a second-line agent. Whether this is a reflection our respondents’ lack of knowledge regarding its documented efficacy or a demonstration of their wariness due to its side effects, remains to be determined. These side effects include, but are not limited to, somnolence, nausea, vomiting, hostility and other behavioural changes.\(^7,9,13\) It is worth noting that gabapentin has been recommended as a first-line antipruritic agent by Goutos et al.,\(^9\) who suggest a slightly improved effect is obtained when used in combination with two peripherally-acting antihistamines. According to Ahuja et al., gabapentin monotherapy is more effective than cetirizine monotherapy, and is no worse in effect than a combination of the two.\(^13\) Goutos, in another paper, had similarly established this efficacy of gabapentin as a monotherapy.\(^9\)

A combination of interventions is needed to achieve satisfactory relief in most patients.\(^3,4,9,13\) Monotherapy with gabapentin may be sufficient in a limited number of patients. Ahuja et al. recommend using peripheral-acting, central-acting, and non-pharmacologic adjuncts.\(^13\) The decision whether to use central or peripheral-acting agents requires careful consideration, taking into account the likely pathophysiologic mechanism of the post-burn itch.\(^9\)

Only a seventh of our respondents indicated they had some form of antipruritic regimen, none of which were standardized or reproducible.

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\(Fig. 3\) - Itch Man Scale (©2000, Blakeney and Marvin).\(^11\)
Conclusion and recommendations

Burn specialists in Nigeria are fully aware of the menace of pruritus following burn injuries and healing. There appears to be little priority given to this distressing ailment and therefore there is little in place (both individually and as a matter of protocol) to adequately tackle this problem whenever it presents. Active management of post burn pruritus is seldom given more than a perfunctory attention. The absence of a clear cut protocol, though not peculiar to Nigeria, leaves successive burn surgeons with the option of developing (or more likely failing to develop) well thought-out approaches for objectively assessing, monitoring and treating this problem.

We recommend the use of the more objective “itch man scale” as a standard assessment tool for patients with post-burn pruritus. This should be used to monitor progress of treatment with the protocol suggested below:

- Scores of >0<3 on the itch man scale should receive massage therapy with moisturizers, with or without non-selective antihistamines used orally and topically.
- Scores of 3 should be given, in addition to the adjuvant massage therapy, oral selective antihistamine (H1 receptor blocker, H1RB) medication in combination with a H2-receptor blocker (H2RB), with or without gabapentin depending on the response and/or the severity of life style disruption.
- Scores of 4 should receive oral H1RB + H2RB + gabapentin, and adjuvant massage therapy with moisturizers.

These recommendations require evidence-based substantiation and necessary modification following more specific clinical research into the efficacy of the suggested protocol among post-burn patients affected by this distressing ailment in Nigeria. We look forward to the emanation of such data from burn centers in Nigeria’s various geopolitical zones, with a view to lending credence to this proposed protocol and/or establishing a well-rooted standard of care for post-burn pruritus patients.

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