Itch and pruritus: what are they, and how should itches be classified?

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ABSTRACT: Itch and pruritus are two terms for the same thing. In this essay I will argue that casting about for a distinction between them creates only confusion. Once that matter is settled, it is still necessary to come up with a clinical classification for itches of different types. No system yet proposed, including the one that will be suggested here, is perfect.

KEYWORDS: classification, itch, pruritus

“Faced with two terms for the same thing, one tends to cast about for a distinction.”†

W. V. Quine (1)

Introduction

Some writers used pruritus to signify itching without visible skin lesions. Others use the terms, essential pruritus, pruritus sine materia, or generalized pruritus to describe itching without a rash as well. But such terms can be misleading when a patient with itching caused by renal failure or another underlying systemic disease has excoriations or a nonspecific rash created by rubbing and scratching. And does not a patient with extensive, severe atopic dermatitis also have generalized pruritus? Although distinctions can be drawn, and many have been, itch and pruritus are synonymous. I prefer (and suspect that it is safer), to use a few extra words to describe different clinical situations whenever pruritus or itching is present. Casting distinctions away, would recommend that itch and pruritus be used interchangeably (2). I would feel this way even if pruritus were not one of the most frequently misspelled words in all of medicine (3,4). Pruritus is also practically impossible to pronounce.†

Prurigo presents some additional and controversial semantic problems of its own. On his tour of the western islands of Scotland, Samuel Johnson noted that the local inhabitants would speak authoritatively whether they knew what they were talking about or not, stating, “such is the laxity of Highland conversation, that the inquirer is kept in continual suspense, and by a kind of intellectual retrogradation, knows less as he hears more” (5). That is how I feel when reading about the various forms of prurigo. I acknowledge that there is a very distinctive disorder that all trained dermatologists would recognize as prurigo nodularis, but I am not sure they would agree about what causes it. They might agree that there is something called prurigo simplex, something called prurigo simplex subacuta, and something called “itchy red bump disease,” – and that some cases of these may or may not be the same as each other, or as papular urticaria. Curious readers with strong minds who are unafraid

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†The introductory quotation and the following paragraph in this essay are taken nearly verbatim from the introduction to reference 2.
of intellectual retrogradation are referred to the standard textbooks of dermatology to learn more about these terms. By the way, I do not accept the term “itchy red bump disease,” or at best regard it as a perpetually provisional diagnosis, which lets the doctor off the hook until the real diagnosis is made (6).

The definition of itch

Savin suggested that itch be defined as “a sensation that, if sufficiently strong, will provoke scratching or the desire to scratch” (7). It may be pleasurable or not. As the present author pointed out at the time, “defining things is a pleasurable activity that provokes quibbles or the desire to quibble.” So the only quibble I might have with Savin’s definition – which I think is otherwise just right – would be the need to acknowledge that scratching may be either conscious or reflexive:

Itching is a sensation that, if sufficiently strong, will provoke either conscious or reflex scratching or the desire to scratch.

Not all itches arise in the skin

Not all itches arise in the skin. Itches that arise as a consequence of pathology in the central or peripheral nervous system can be said to have a “neurogenic” or “neuropathic” origin; the terms are most often used interchangeably. Indeed, neuropathic is sometimes used to describe the particular character of itch or pain of neurogenic origin (for example: coexistent stinging, burning, tingling, pain, formication, paresthesia, hypesthesia, hyperesthesia, etc.). Notalgia paresthetica and brachioradial pruritus are examples of two neurogenic itches that often, but not always, have a neuropathic character. Meralgia paresthetica, an entrapment neuropathy of the lateral femoral cutaneous nerve, sometimes itches, but numbness or other paresthetic sensations are usually more prominent.

Although the final pathway of certain metabolic itches, such as cholestatic pruritus, may involve chemicals, such as opioid peptides, that affect the brain rather than the skin, I would argue that such itches should not be considered primarily neurogenic, but rather simply “metabolic” or “systemic.” As I argued for simple synonymy in the case of itch and pruritus, I would also argue that attempting to make practical distinctions between neurogenic and neuropathic is too taxing to the brain and fraught with hazards, such as intellectual retrogradation, of its own.

Itch classification

An itch classification scheme has been proposed by Twycross and colleagues (8). It has four categories, whose definitions the present author has taken the liberty of paraphrasing:

• Pruritoceptive itch: itch originating in the skin, as in scabies or urticaria
• Neuropathic itch: itch arising as a consequence of neuroanatomic pathology, such as from a brain tumor
• Neurogenic itch: itch arising as a consequence of neurochemical activity, such as the action of opioid peptides in cholestatic liver disease
• Psychogenic itch: “as in the delusional state of parasitophobia.”

This classification is imperfect in several ways. First, although itch may occur as a consequence of neuroanatomic and/or neurochemical pathology, the terms neuropathic and neurogenic are not customarily employed to make such a distinction, not even by neurologists. Neuropathic is often used to describe the character of pain and may also be used to describe the character of itching of neurogenic origin (which may burn, tingle, prickle, or display other paresthetic aspects). I believe, as I have just argued, that neuropathic and neurogenic should be considered synonymous for practical clinical purposes. If by a Procrustean effort the terms were forced to take on the burden of the distinction suggested in the Twycross scheme, it would still be impossible to remember which is which. I do admire the attempt to address the pathophysiological nature of itch arising in the skin by naming it pruritoceptive (by analogy with the term nociceptive, which is used to describe pain). But although this term could be adopted as a scientific one that addresses the physiology of itch, it is not useful clinically. The term has other problems as well. Like pruritus, it is not easy to pronounce. In the end it is also rather too broad, and does not encourage clinical or pathophysiologic subcategorization of itches arising in the skin. I am not aware that “nociceptive” is widely used to describe or classify pain in the clinic: in the end it is too broad despite its utility in the study of sensory physiology. While nociceptor is used by scientists to describe pain receptors in the skin, I like “itch receptor” more than the term “pruritoeptor,” which, by analogy with nociception, would presumably follow from
accepting “pruritoceptive.” By the way, I suspect that “pruritoceptive” as a term for describing itch originating in the skin is, if not tautological, still likely to fall subject to Quine’s razor.

Another problem, as the authors point out, is that “there is no reason why one type of itch cannot coexist with another – for example, in the itch of atopic eczema, neurogenic as well as pruritoceptive itches seem to arise in the same patients.” I would point out that atopic eczema might also involve neuropathic aspects, as they define the term, when lichenification with neural proliferation is present. And the itch of atopic dermatitis can certainly assume psychogenic features as well. In other words, atopic dermatitis can fall, to one degree or another, in each of their four categories. Although overlapping or mixed categories are going to occur in any clinical categorization of itch (including the one I am about to propose), there just are not enough categories in the Twycross scheme to be helpful in the clinical approach to the patient.

In a clinical classification scheme, the term “dermatologic” would be substantially more useful than pruritoceptive, although not without some problems of its own. For these and other reasons, I cannot agree with the claim that the Twycross classification is “clinically relevant,” although parts of it go at least part way in formulating a useful approach to categorizing the “pathomechanisms of pruritus.” Perhaps two classification schemes will be needed, one to describe the basic scientific, pathophysiological aspects, and one that could help doctors in the clinic figure out what is wrong with their patients.

Erasmus said that thanks to folly, there are as many grammars as there are grammarians. With a nod to Erasmus, I offer here a slightly modified version of a clinical itch classification scheme he presented at the American Academy of Dermatology Annual Meeting Itch Symposium on March 21, 2003 (Table 1). I have found it helpful in the clinic. It meets several particular requirements for clinical practice: (a) it is relatively unambiguous (e.g., it does not attempt to make a fine distinction between neurogenic and neuropathic); (b) it is relatively easy to remember; and (c) it may be helpful in defining an approach to the evaluation of a patient with itching, whether there is a rash or not. I think it could still bear some discussion and improvement.

How would such a scheme work in practice? Let us take several simple and then several more complex and challenging examples. Dermatitis herpetiformis is a dermatologic disease of immunologic origin: it would fall under “dermatologic” and “systemic.” Psoriasis and atopic dermatitis would be considered primarily dermatologic, although it is obvious that they have “systemic” origins as well. Systemic mastocytosis would fall under systemic; cutaneous mastocytosis would fall under dermatologic. Although itch is not ordinarily a feature of the lesions of cutaneous lupus, in this categorization a patient with itchy cutaneous lupus (which does occur), would fall under the dermatologic, systemic, and mixed categories. The patient who presents with generalized itching and no readily detectable cutaneous abnormalities might fall into the systemic category as a consequence of something like Hodgkin’s disease or renal failure, but could also have a strictly dermatologic condition such as very subtle dryness and winter itch. Cholestatic itch would fall under the systemic category (underlying systemic disease) as well as the neurochemical subtype of neurogenic itch (as the mechanism involves opioid

Table 1. Clinical categories of itch

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>Dermatologic</td>
<td>arising from diseases of the skin such as psoriasis, eczema, winter itch, scabies, and urticaria</td>
</tr>
<tr>
<td>Systemic</td>
<td>arising from diseases of organs other than the skin, such as primary cholestatic liver disease, renal failure, Hodgkin’s disease, polycythemia vera, and certain multifactorial (e.g., metabolic) situations</td>
</tr>
<tr>
<td>Neurogenic/neuropathic</td>
<td>arising from diseases or disorders of the central or peripheral nervous system, such as brain tumor, multiple sclerosis, neuropathy, and nerve compression or irritation (e.g., notalgia paresthetica and brachioradial pruritus). Such itches often have a neuropathic character. This category also includes several systemic disorders in which itch arises as a consequence of chemical or metabolic factors.</td>
</tr>
<tr>
<td>Subtype: neuroanatomic</td>
<td>(as in entrapment neuropathies)</td>
</tr>
<tr>
<td>Subtype: neurochemical</td>
<td>(as in liver disease)</td>
</tr>
<tr>
<td>Psychogenic</td>
<td>“purely psychological” or “purely psychiatric”</td>
</tr>
<tr>
<td>Other</td>
<td>because all classification schemes need an other</td>
</tr>
<tr>
<td>Mixed</td>
<td>because categories may overlap and/or coexist</td>
</tr>
</tbody>
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peptides acting on the nervous system).

In the evaluation of a patient with generalized pruritus and heretofore undetected cholestasis, the proposed classification scheme is helpful because it directs (or shall we say enables), the physician to consider systemic as well as dermatologic and other causes of itching without a rash. The presence, absence, or nature of skin lesions is not an explicit feature of the proposed classification scheme because the distinction breaks down too easily. For example, scabies incognito is a dermatologic disease that can present with virtually undetectable skin changes, whereas a patient with Hodgkin’s disease can have notable (e.g., eczematous) cutaneous changes created by rubbing and scratching, although it is not a skin disease per se. In any event, a classification scheme is only one part of an overall approach to the patient with pruritus of undetermined origin. Several ways of thinking may be employed together; we have recently presented an algorithmic approach based on whether the itch is localized or generalized, and whether detectable cutaneous abnormalities are present or not (9).

When it comes to experimental research and to categorizing diagnosed itches according to underlying pathophysiology, something closer to the Twycross scheme will probably be useful in addition to the clinical scheme I have proposed here. A first go at such a pathophysiological scheme, eliminating the distinction between neuropathic and neurogenic, is provided in Table 2. I do recognize that in arguing that neurogenic and neuropathic should be used interchangeably, I am open to an argument made by Joseph Williams, namely, “When you use two words for one concept, you risk making your reader think you mean two concepts.” (10) I don’t. Perhaps such paradoxical concerns and inconsistencies are inevitable in thinking about the most prominent and zen-like of dermatological symptoms – itch, an invisible sensation in the most visual of medical specialties.

Table 2. A first stab at a provisional pathophysiological classification of itch

<table>
<thead>
<tr>
<th>Cutaneous</th>
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<tr>
<td>Subtype: Mechanical</td>
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<tr>
<td>Subtype: Inflammatory or immunologic</td>
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<tr>
<td>Subtype: Neoplastic</td>
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<tr>
<td>Subtype: Other</td>
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<tr>
<td>Neurogenic/neuropathic</td>
</tr>
<tr>
<td>Subtype: Neuroanatomic</td>
</tr>
<tr>
<td>Subtype: neurochemical</td>
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<tr>
<td>Psychogenic/psychologic</td>
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References
