Approach to Acute Rash in Adults by Dr Jim Muir

Introduction

A common presentation in general practice is the patient who complains of a rash. As with any complaint or symptom, a number of differential diagnoses are possible. The purpose of our consultation with the patient is to narrow down the list of possible diagnoses based on the history and clinical examination. We then have to consider which investigations we will do to confirm our favoured diagnosis, if possible and exclude our differential diagnoses. At the same time, we have to consider the management we will institute and whether there are any patient-related factors that may influence our choice of management. Typically, with any skin disease, there will be more than one treatment option. Some options may be contraindicated, relatively or absolutely, by patient-related factors.

By the end of the consultation, we should have taken a comprehensive history, both general and guided by the particular relevant patient factors and our suspected diagnoses and potential management. We should have also taken a history that will allow us to treat the patient in a safe and effective manner.

We should have conducted a thorough and complete clinical examination of the patient. The examination should determine the extent of skin involvement, find any and all diagnostic clues, and if relevant, determine the presence or absence of systemic involvement. Typically, with any patient presenting with a rash, our examination should include a full skin examination combined with an examination of the scalp, hair, nails, and mucosa. With some rashes, it may be necessary to perform a physical exam, looking for features such as lymphadenopathy, arthritis, muscle weakness, etc.

Consultation and Diagnosis

During the consultation, from our history and examination, we will be working out which investigations, if any, need to be performed. Investigations may be performed in order to confirm the diagnosis and exclude the differentials, but also to ensure safe management of the patient. Ideally, the initial investigations should occur with the first consultation. At the end of this consultation, we should be able to send the patient on their way with either a diagnosis or have the appropriate investigations in place to arrive at a diagnosis and a management plan in place.

Here, we will explore the general approach to a patient presenting with a rash.

Dermatological presentations are very common, possibly accounting for around 15% of all general practice consultations. When a patient presents with a rash, it is really very little different to any other clinical issue; we have to consider the possible differentials for their presenting complaint, and then take a history, perform an examination, and order investigations that will allow us to diagnose and safely treat the patient in front of us.

Firstly, when someone presents complaining of a rash, there is really a limited number of possible diagnoses. In no particular order, these would include infection and infestation, reaction to an external agent, a flare of a longstanding endogenous dermatitis, or onset of endogenous dermatitis. Some patients will present with rashes they have actually had for a very long period of time but have only recently noticed, and also people present complaining of a "rash" that turns out not to be a rash.

Common Causes of Rashes

Infections and infestations include the obvious viral infections such as measles, rubella, varicella, and so on. Bacterial infections such as impetigo and folliculitis are also very common. However, we will also see seroconversion reactions such as that seen with HIV, Barmah Forest, infectious mononucleosis, and many other viral infections.

Infestations such as scabies, bed bugs, lice, and even insect bites are another factor to consider.

Then, there are less common infections, such as atypical mycobacterial infections, deep fungal infections, and so on.

Reactions to external agents are another very common cause of a patient presenting with a skin eruption. The classic, of course, is reactions to drugs. These may be drug allergies, which one will commonly see with oral antibiotics such as Penicillin and Sulphonamides, but also drug toxicities and side effects. For example, the phototoxic side effect of Amiodarone or the pigmentary disturbance that can be seen with agents such as Minocycline or Hydroxychloroquine. Agents that come in direct contact with the skin can also induce contact dermatitis, which can be irritant, as with exposure to detergents or paint thinners or allergic, for example, reactions to fragrance, nickel, or dyes, etc.

There is a range of what can be termed reaction patterns. These are conditions that have a variety of triggers and include conditions such as erythema nodosum, erythema multiforme, vasculitis, urticaria and erythema annulare centrifugum as well as a number of others. These have a distinctive clinical and histopathological appearance but a multitude of possible triggers. Identification and if possible, eradication of the trigger is crucial to their management.

Then, there are a large number of endogenous dermatoses that can follow a very chronic time course, with periods of relapse and remission. The common examples include psoriasis, seborrheic dermatitis, and atopic eczema, but we also have to consider the multiple other dermatoses such as cutaneous lupus erythematosus, the autoimmune blistering disorders, and hereditary diseases such as Darier's. This group of endogenous dermatoses can come on at various stages of life. Whilst a patient with psoriasis will usually have developed the disorder by their twenties or thirties, it is certainly by no means unknown for patients not to have their first episode until very late in life. It has recently been recognised that atopic dermatitis can first manifest late in life.

The large group of autoimmune disorders, including blistering disorders and cutaneous lupus erythematosus, can come on at any stage of life. Many of these become more common as one ages. Other endogenous dermatosis that can present a cutaneous manifestation of internal disease, for example, are myxoedema associated with thyrotoxicosis, amyloid deposits in the skin with multiple myeloma, the various paraneoplastic disorders, and cutaneous manifestations of hepatic and renal failure, etc.

People will also notice changes in their skin, which they will feel are a new onset rash but are not. The classic example of such is the sun-induced changes we see around the neck called poikiloderma of Civatte. It is a fairly common event for this to be noticed for the first time, even though it has existed for many years. Another presentation we can see

is young men with concerns about lesions on their genitals, which they feel may be a manifestation of sexually transmitted diseases. When, in fact, they are longstanding areas of ectopic sebaceous glands or pearly penile papules.

So, these are the broad groups of conditions we might consider when someone presents complaining they have developed a rash. As with any presentation, we may likely have a good idea of the diagnosis and management just from hearing the patient's story, or final diagnosis may require a careful history and examination couple with extensive investigations and perhaps second opinions.

History Taking and Examination

When someone does present with a rash, we would initially take a history of the presenting complaint. This is very similar to the history we might take for someone presenting with chest pain. We want to know the site the rash affects, and this can be asked in both a general manner, but also, if one does have a diagnosis in mind, specific questioning of the patient may be appropriate. For example, suppose I suspect a patient has psoriasis. In that case, I will specifically ask them whether they have noticed scaling and redness in their scalp, either recently or at any stage in their life, or if they have noticed changes on their elbows, knees, and natal cleft, which are areas commonly involved with psoriasis. On the other hand, if I suspect seborrhoeic dermatitis, I will be asking if they have noticed changes in their medial eyebrows, paranasal area, and central chest. You also ask them about the character of the rash, what the lesions look like and what symptoms they cause. An exudative rash is most likely an eczematous eruption, for instance, whilst psoriasis is typically dry and scaling. Itch is more commonly a feature of eczema than with psoriasis.

One issue that does present with skin disease is that there may not be much to see when the patient initially presents because the condition follows a fluctuating course. A careful history may still allow you to make at least a tentative diagnosis. With these patients, the best approach is to ask them to re-present when the rash recurs.

If they do have symptoms such as itch or burning, it is useful to ask about exacerbating or relieving factors. This can help both with management and diagnosis. For instance, if one is suspicious of a drug reaction a history of it becoming worse with sun exposure may narrow down the list of possible culprits to those medications known to cause photosensitivity. Similarly, with endogenous dermatoses such as cutaneous lupus or polymorphic light eruption, we may be able to elicit a history of exacerbation with sun exposure. If we suspect an occupational dermatosis such as irritant hand dermatitis in a kitchen hand, there will often be a clear-cut history of remission over their days off and flaring on return to work.

We also need to know the time course of the rash, how long they have suffered with the problem, and whether the onset of the rash was related to any specific events, such as the commencement of any new medication, occupation, or hobby.

It is very important to take a history of any treatment they have had to date. We need to know what treatment they have had and whether it has been of any benefit. Treatment may influence the clinical and, indeed, histological appearance of the rash. For example, a patient who has been using a potent topical steroid before they present may have very little to see, or the character of the rash may have been altered significantly. Distinguishing two steroid-responsive dermatoses, such as psoriasis and eczema, may be impossible after a few days of potent topical steroids.

It is also essential when ordering investigations a biopsy done on a patient who has recently been on oral or topical steroids may not reveal the actual histopathological features of the condition they suffer from. Similarly, a fungal scraping taken from a patient who has been applying a topical antifungal may well be falsely negative.

Once we have taken the history of the rash itself, we then move on to the usual admission-style history. Obviously, we want to know whether they have any past history of skin disease, including in childhood. Their current problems may well be a recurrence of their previous skin disease, or their past history of skin disease may influence which treatment they choose to use. For instance, in a patient with a history of psoriasis who presents with what we feel is a drug eruption, one would be cautious about using systemic steroids as this can cause psoriasis to flare as the steroid dose is reduced.

A very common risk factor for skin disease is the family history of a condition, so this should be sought when we take our admission-style history. Psoriasis, atopic dermatitis, cutaneous lupus, and many other skin conditions all 'run' in families.

Their past medical history is important. One reason for this is that this may provide a guide to skin conditions that can be associated with underlying medical problems. For instance, in a patient with a previous history of internal malignancy, the possibility of a paraneoplastic eruption would be worth considering. A patient with a history of diabetes or thyroid disorders may have cutaneous manifestations of this condition. Atopics are more prone to developing hand dermatitis.

Obviously, a patient with a history of a medical condition that may be adversely affected by the usual treatment for the skin condition they present with is important to be recognised. We would be cautious using systemic steroids, for instance, in a patient with diabetes, hypertension, or stomach ulcers.

A complete medication history is vital, especially if one is considering a drug eruption. Patients are often uncertain of the medications they are taking and may omit to mention certain medications. It is by no means rare for patients not to mention drugs they take intermittently, such as NSAIDs, sleeping tablets or the occasional diuretic for ankle swelling. Although rare, systemic reactions to topical medicaments such as eye drops are seen, and so the drug history needs to be very thorough. Unless asked directly patients will often not volunteer that they are taking 'natural' or illicit drugs.

If one is considering that the likely cause of the skin eruption is a drug reaction, we not only need to know which medications they are taking but the time course of the medications as well. We live in an age of polypharmacy. If someone presents with a drug reaction and they are on seven different agents, it may be very difficult to work out the triggering agent without this knowledge. Most drug eruptions occur within the first weeks to months of beginning the use of the agent, and so if a patient is on multiple medications but only one is a recent addition, this may well be the culprit.

A history of drug allergy or any other allergy must be sought. This can be very important as obviously we would not want to expose the patient to drugs they are allergic to, but also they may have a history of reacting to an agent that cross-reacts with one of their current medications.

A systems review may need to be conducted, depending on the rash. Obviously, if one suspects that their rash is a manifestation of lupus, dermatomyositis, or a paraneoplastic phenomenon, a history guided by this knowledge would be appropriate.

Clinical Examinations

The next stage of the consultation, once we have amassed the above information, is the clinical examination. This examination must be thorough and complete. Even with a rash that the patient feels is quite localised, for example, hand dermatitis, it is always a good idea to try and conduct a complete skin examination. The reason for this is that rashes can be much more extensive than the patient is aware of, and sometimes, there are diagnostic clues as to the nature of the presenting complaint from examination of other areas of skin. For example, the three most common causes of a red, scaly hand are psoriasis, eczema, and tinea. Suppose we restrict our examination to the hands alone. In that case, we may then miss the opportunity to find the coexistent psoriasis in their scalp and natal cleft, the tinea in their groin or pedal web spaces, or the eczema in their antecubital and popliteal fossae. A red scaly hand in a psoriasis sufferer is more likely to be psoriasis rather than tinea.

Knowing the full extent of a rash will influence diagnosis and management. On full skin examination, it may be apparent that the eruption is more severe in sun-exposed skin, pointing to a photosensitive disorder. On the flip side is the psoriasis patient, who will be essentially free of involvement on their sun-exposed skin. This feature may point us toward offering phototherapy as a treatment. If you suspect a disorder that involves genital skin, such as lichen sclerosis or lichen planus, then this needs to be excluded by direct questioning and examination. Not all patients will mention concerns of an intimate nature.

Examination of the patient needs magnification and good lighting. We need to document the extent of the disease and try to work out what the primary disease process is. The examination should ideally include the skin, scalp, palms, soles, hair, nails, and mucosa. It may be necessary to examine genital skin, especially if you suspect a condition that does affect the genitals. Patients will often not volunteer involvement in this area for cultural reasons. The classic example is the patient who presents with a widespread itchy eruption, where the diagnosis is one of lichen planus. Unless you specifically ask about genital involvement and look for the same, this may go undiagnosed with what may be disastrous issues down the track. Genital lichen planus is associated with significant scarring and malignant transformation.

When examining the skin, we need to document the extent of the eruption and the presence or absence of mucosal, scalp, and nail involvement. We need to determine the basic pathological process and where in the skin the disease is occurring; in other words, is it epidermal, dermal, in the subcutis, or a mixture of any two or three of these? An annular eruption that is purely dermal is unlikely to be erythema annulare centrifugum or tinea, for example. Clinical features will infirm our diagnostic deliberations. For example, scale is seen where there is significant involvement of the epidermis, which can be a feature of both psoriasis and eczema. However, if there are co-existent vesicles, psoriasis is largely excluded, and eczema becomes more likely. It should be possible in most instances to work out whether the rash is scaling, vesiculobullous, purpuric, etc. Clues to the localisation of rash in the levels of the skin include that epidermal lesions tend to be scaly, dermal lesions tend to be well-defined, and lesions in the subcutis tend to have ill-defined margins.

If appropriate, we may perform other examinations, for example, testing for muscle tenderness and strength in a patient with suspected dermatomyositis and looking for signs of rheumatoid arthritis in a patient with possible rheumatoid nodules or pyoderma gangrenosum.

It is also worth noting where the rash does not affect. The classic example is in the patient with a photosensitive condition, where sun-protected areas are either spared or less severely affected. Similarly, in a patient with a condition restricted to their intertriginous areas, such as the submammary fold, axillae, or groin, local conditions in these areas of skin likely determine the site of involvement and the severity of the participation.

At this stage, after taking a thorough history and performing a careful skin examination, we should have come up with a workable differential diagnosis, if not an actual diagnosis. We then have to consider whether or not we need to perform investigations. Certainly, investigations are not required for all rashes.

The reasons we perform investigations are to confirm the diagnosis, exclude any differentials, determine the extent of involvement where systemic involvement is possible, look for a trigger, and allow safe treatment. Not all of these apply to all rashes, of course.

Investigations

Investigations that we should consider include skin biopsy. Ideally, a skin biopsy should be performed before the initiation of treatment. The reason for this is that if we institute treatment, we may miss our best chance of acquiring a representative sample. Common errors with biopsy include taking samples of lesions that are late in their evolution or have been altered by scratching ulceration, or treatment. One should try to biopsy a representative lesion that has not been excoriated or secondarily infected. A skin biopsy for diagnosis of a rash should include the epidermis, dermis, and subcutis and needs to be of a size sufficient to be representative. A 3-4mm punch biopsy will usually be adequate. However, if we are trying to diagnose a disorder localised in the fat, such as erythema nodosum or the various forms of lobular panniculitis, a larger and deep elliptical biopsy may be needed.

The biopsied tissue harvested is most commonly submitted to the lab in formalin for histopathology. However, with some rashes, we might also need to submit a separate specimen for direct immunofluorescence, for example, in the case of autoimmune blistering disorders or suspected lupus. On occasion, we may need to submit tissue for culture for diagnosis of infectious causes such as atypical mycobacterial or deep fungal infections. In these cases, the specimens are not presented in formalin. They either have to go in fresh in sterile saline or special transport media, depending upon the anticipated delay in reaching the lab. If in doubt, the pathologist should be contacted.

When we submit the biopsy to the lab, we should give the pathologist as much information as possible on the history and clinical features and any medications the patient is on, if appropriate. When reviewing histopathology results, it is important to recognise that the histopathology of skin conditions can overlap significantly.

Another investigation that is worth considering with a new onset of scaling eruption is fungal scraping; tinea is a condition that can present in unusual ways and is, of course, curable. Swabs for bacterial culture, especially in exudative or inflamed lesions, are often useful. Viral swabs for herpes simplex or varicella may be needed.

Before initiating anti-infective treatment, appropriate cultures should be at least considered. Failure of a suspected bacterial infection to respond to antibiotic treatment can be due to misdiagnosis of a herpetic lesion or bacterial resistance, and these tests may reveal this.

We may need to perform blood tests. The blood tests we order would be guided by our diagnosis, systems review, and treatment choice. For example, if our histopathology confirms our clinical diagnosis of cutaneous lupus, we would then order serology for systemic lupus and then check haematology and renal function parameters. Obviously, with a paraneoplastic disorder we would institute investigations for underlying malignancy as guided by history, risk factors, and systems review. Blood tests may also be needed depending on the treatment we are considering using. For instance, if one is considering using immunosuppression, Quanteferon Gold to exclude tuberculosis may be required. Tests to exclude diabetes in a patient about to commence Prednisone is another example.

Other investigations, such as radiological imaging, may be needed in circumstances where systemic involvement is possible, where the condition is considered to be related to an underlying disorder, or if the treatment we will employ carries risks of systemic complications.

In many instances, it is entirely reasonable to institute treatment based on our clinical diagnosis before getting back the results of investigations.

Our consultation for a patient with a new rash would involve a careful history, thorough examination of both the skin and generally, if indicated, appropriate use of investigations to make the diagnosis, exclude differentials, determine the presence or absence of systemic involvement, and allow safe treatment. It is also worth considering illustrative images of the patient's rash.

If, by the end of this process, the diagnosis remains uncertain, the managing doctor will have collected enough information to seek telemedicine advice, especially if they have high-quality, representative clinical images. When taking images, we should try to capture the clinical features. Typically, this will mean distant shots to show the distribution and close-ups to reveal the morphology of the rash or lesion. Good-quality images can be taken with any available modern digital imaging device, including mobile phones and iPads. The photos must be accompanied by the salient information garnered from the consultation and the results of any investigations.

Management

Management will be determined by the final diagnosis, patient factors, physician preferences and available resources.