

A SEQUEL TO THE CORE TUTORIALS IN
DERMATOLOGY FOR PRIMARY CARE

TESTS AND TECHNIQUES - WHICH, WHEN AND WHY?

VERMILION CLIFFS,
ARIZONA



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‘Test’ a procedure to establish the quality,
performance, presence etc. of something

‘Technique’ a special way of doing something

TESTS AND TECHNIQUES - WHICH, WHEN AND WHY? A SEQUEL TO THE CORE TUTORIALS IN DERMATOLOGY FOR PRIMARY CARE

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The full set of Core Tutorials in Dermatology for Primary Care comprises a prequel on diagnosing skin conditions along with chapters on The Eczemas, Psoriasis, Skin Infection and Infestation, Skin Malignancy, Leg Ulcers, Acne and Urticaria and Related Allergic Disorders. These chapters and their accompanying Self Test Questionnaires are available from Dermal Laboratories. They can be downloaded from the Healthcare Professionals Resources section of the Dermal website www.dermal.co.uk or can be requested directly from Dermal at the contact details below.

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Generally, the scope for practical procedures has narrowed considerably over my 30 plus years as a general practitioner but it still remains important to acquire a skill set in dermatology. As emphasised in the Core Tutorial Prequel, ‘A Systematic Approach to Diagnosing Skin Conditions’, dermatology is not just about pattern recognition. To achieve robust, accurate diagnoses, we need to follow the time honoured model of medicine, history, examination and confirmation (with appropriate tests). History remains “king” and tests remain of much more limited value unless correctly targeted. We can distinguish relatively easily with experience which broad categories of rashes and lesions we are dealing with but what tests will help both confirm and refine our clinical diagnoses?

INTRODUCTION

Here are some suggested test groups for some commonly occurring scenarios. These reflect my personal practice and can no doubt be debated on and added and subtracted from!

COMMONLY OCCURRING SCENARIOS



GENERALISED PRURITUS - “itch without rash” or evidence of only artefactual skin damage.

This all too common problem can have multiple causes; the tests will only address any underlying metabolic imbalance such as anaemia, renal or liver dysfunction, thyroid imbalance (both over and underactive), myeloproliferative disease and polycythaemia. A basic test set* should include the following:

- FBC (full blood count)
- U+E (urea and electrolytes)
- LFT’s (liver function tests)
- TFT’s (thyroid function tests)
- ferritin
- viscosity

*Further tests might be indicated according to these results.

VASCULITIS - non blanching purpuric rashes

Virtually any and every test could have some justification here as the causes of vasculitis are myriad and will be directed to a large extent by history and examination. The “big players” in the causation of vasculitis are infection, drugs and connective tissue/auto-immune type diseases but in up to 50% of cases, no underlying aetiology will be identified.



A suggested standard vasculitic screen is as follows:

- Auto-immune profile
 - (N.B +ve ANA (antinuclear antibody) titres of 1:80 are common and are likely not to be significant)
- General bloods.....U+E, LFTs, FBC, viscosity
- Complement C3+4
- Immunoglobulins
- CRP (C-reactive protein)
- Urinalysis (repeated at least on 2 separate occasions to avoid missing renal involvement)
- BP should also be monitored

As with generalised pruritus, further tests may be either directed by history and/or results from the initial screen.

EXTENSIVE VENOUS ULCERATION



LEG ULCERS - all patients presenting with leg ulceration should have a basic blood screen to include:

- FBC
- U+E
- LFTs
- albumin
- TFTs
- blood sugar (or HbA1c)

Remembering that a “leg ulcer” is not a diagnosis and that the patient has a “leg ulcer because...”

I have confined myself here to common broad presentations in general practice. There are many more specific data sets, for example erythema nodosum, but this is beyond the scope of this article.

This speciality is a foundation stone underpinning dermatology but to get the most benefit from it requires an informed conversation between clinician and pathologist. A recent poster at the Annual British Association of Dermatologists (BAD) Meeting reported that 56% of referral letters from GP to secondary care dermatology failed to propose a diagnosis!¹ I find this concerning and strongly believe that doctors should consider and commit to a diagnosis or reasoned differential in order to identify either their knowledge or learning needs most importantly to themselves.

HISTOLOGY

This applies just as importantly in requesting histology which should most commonly be used to confirm the clinical suspicions and also patently for medico-legal purposes. It is not good enough in my mind to simply state “lesion” and it becomes even more important with rashes. To request histology on a biopsy of an undiagnosed rash has been described as the “last bastion of the diagnostically destitute!” If you have no inkling of the cause of the rash after careful history taking and examination, it is unrealistic that you can expect the pathologist to come up with a “eureka” from examining a tiny scrap of skin marinated in haematoxylin and eosin! If you are truly confounded by a rash, resist the temptation to biopsy and refer to someone with greater experience. If you are in the habit of taking biopsies, you should have some knowledge of how to interpret the subsequent reports. Attending local multidisciplinary teams (MDTs) can be a very useful resource.

HELPFUL TIPS

Here are some hopefully helpful tips to make the best of histology:

1. These are various types of biopsy that can be carried out. Punch biopsy has become a popular technique; they are available in a number of different sizes, 3, 4 and 6mm being the most commonly used. The very small 3mm size should be reserved for lesions in very sensitive anatomical sites such as the nose or near the eye as the small amount of material yielded does challenge the pathologist; 4mm can be used for lesion diagnosis and 6mm used for skin rashes or sometimes indeed to fully excise small well defined lesions. All can be closed with often a single suture (perhaps a horizontal mattress suture in 6mm biopsies). All punch biopsies should be pushed through to the hilt of the instrument if possible to supply a good and deep specimen of tissue. Traditional incisional elliptical biopsies still have a place and can provide larger pieces of tissue for analysis; curettage biopsies can be more difficult to interpret due to crosscutting unless the instrument is used to provide a single shave of tissue. In relation to individual lesions, ask yourself “Do I really need a biopsy or would it be best just to remove the whole lesion?” This may well spare the patient both the inconvenience and expense of two procedures as well as facilitating the “patient journey”.
2. Beware sampling error particularly in larger potentially dysplastic lesions. It can take experience as to what part of such a lesion to biopsy. A report may be reassuring showing actinic keratosis or Bowen’s disease but another part of the same lesion may have progressed to invasive squamous cell carcinoma (SCC)!
3. Avoid incision biopsies of potentially melanocytic (i.e. pigmented) lesions. The risk of disease dissemination if this were to be melanoma is purely theoretical but sampling error is more of a concern. The exception to this is suspected large lentigo maligna melanoma but having both experience and dermoscopic skills are recommended. Suspicious melanocytic lesions should initially be removed with narrow margins **only by those accredited to do so**.
4. If the lesion to be biopsied is ulcerated, then direct the biopsy to the edge of the lesion avoiding the area of ulceration as the histology may be otherwise non-specific and less helpful.
5. Skin biopsies of rashes should be a minimum of a 6mm punch biopsy. A larger elliptical biopsy across the margin of involved and uninvolved skin is better. If vasculitis/panniculitis is suspected, the incisional biopsy must be deep and include subcutaneous fat.

6. Follow the EFG rule that all lesions that are Elevated, Fixed (or Firm) and Growing need to be either biopsied or excised for histology.

EFG LESIONS REQUIRE HISTOLOGY (THIS IS A MERKEL CELL TUMOUR)

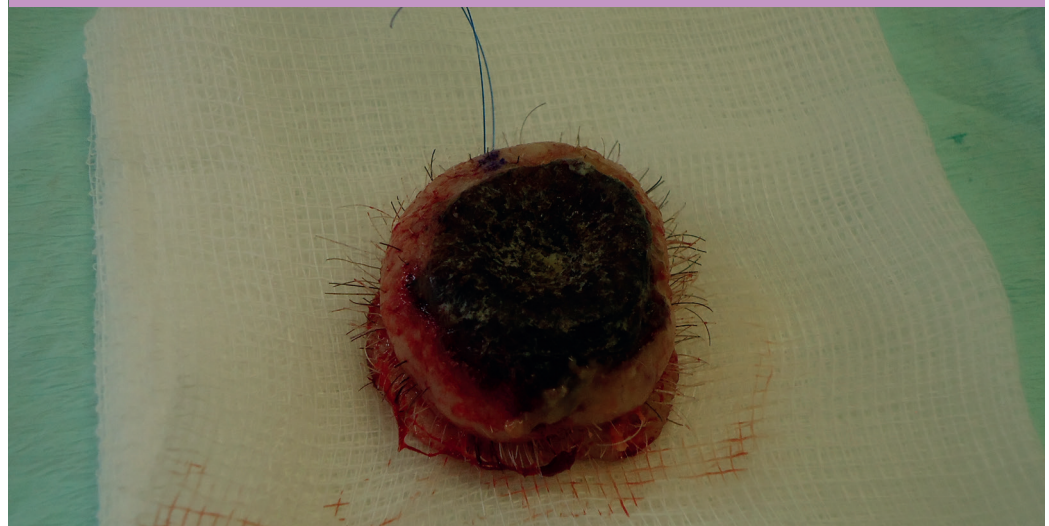


7. If employing cryotherapy or topical chemotherapy, then you have to be very sure of the diagnosis as you are essentially destroying the evidence unless you pre-biopsy.

8. If you are in any doubt about the margin of a potentially dysplastic/neoplastic lesion and you are approved to remove it, consider an orientating marker suture loosely tied to avoid distortion of the specimen; our local policy is to insert these at 12 o'clock.



BIOPSY WITH MARKER SUTURE



9. For biopsies of hair follicle pathology, it is useful to take 2 punch biopsies so that the pathologist can section both in horizontal and vertical planes.

10. If autoimmune bullous disease is suspected, histology and immunofluorescence (IMF) are required **before** initiating treatment.
11. IMF can technically be done in primary/intermediate care with the availability of Michel's transport medium **but** careful consideration should be given as to when this should be requested as it is an expensive test.
12. If a lesion is covered in scab, it is important this is removed so that a diagnosis can be more accurately achieved; how do you know if there is a serpent under the stone unless you lift it up! This can usually be achieved after the application of gel/soaking off; a little local anaesthetic may be needed for very adherent scabs. You will then be in a much better position to distinguish between an actinic keratosis and a low grade SCC for example and to determine whether referral is needed and indeed who to and how quickly.
13. Good quality information on the request form is of great importance! The pathologist will be **SAD** (Site, Age and Distribution) unless this minimal data set along with a suggested clinical diagnosis/differential is stated.
14. If more than one lesion is removed at the same time, they must be placed in separate pots even if you are sure that they are of the same pathology. I have had experience of 3 lesions being submitted in one pot, two seborrhoeic keratosis and one melanoma; this clearly created problems!
15. Everything that is removed needs to be submitted for histology perhaps with the exception of multiple small skin tags, viral warts in young patients and ingrowing toenails.

MINOR SURGERY

The scope for so-called "minor surgery" (I prefer the term "local anaesthetic surgery"), has much diminished in primary care due to current guidance both on "low priority" procedures and the restrictions on treating suspected skin cancers. Although the volume of work has decreased, it is still important to carry out procedures to a good standard. Good local anaesthetic technique can greatly enhance the patient experience. For the highly nervous or needle phobic patients, consider pre-anaesthesia with topical agents such as EMLA. If haemostasis isn't a consideration, then use plain lidocaine as it is less painful. It of course remains mandatory for digits and the penis but **not** as stated in some older textbooks, for ears and noses where there is often a very rich vascular supply and vasoconstriction can be of great advantage.

The anaesthetic should be introduced through a narrow gauge needle slowly, deeply and ideally perpendicular to the skin. The discomfort is mainly due to the low acid pH for which there is no easy answer. Plain lidocaine is more comfortable but not always the best option if vasoconstriction will confer a significant advantage. Warming the anaesthetic prior to administration, if feasible, also reduces discomfort. Be generous but also be aware of limitations, although these are not likely to be exceeded in most primary care based procedures, (20ml of plain lidocaine; 50ml with adrenaline/epinephrine).

The problem I have most encountered is poor patient experiences with digital blocks most often used for nail avulsion. The key here is patience assuming the anaesthetic is properly administered. A minimum of 5-10 minutes (longer if necessary) should be allowed to achieve good anaesthesia. My personal practice is to arrange to see another patient while waiting for the block to be achieved. If required, "top up" anaesthesia can be given more distally when partial anaesthesia has been achieved.

ANTICOAGULANTS

There are a burgeoning number of patients on these various medications although this should not be an issue for most primary care procedures. Current advice is that these medications should be continued peri-operatively and this should not constitute a significant issue for most primary care based procedures where excessive bleeding would not be anticipated. My practice with warfarin is to check the INR 2-3 days pre-operatively and if below 3, plan to proceed. If aspirin or clopidogrel are to be stopped, this would ideally be one week before the planned procedure. Most problems I have encountered relate to clopidogrel especially in the period 6-24 hours post op when the vasoconstriction has worn off. Pressure dressings can be used if risk is identified. I feel I cannot as yet comment on the new class of novel oral anticoagulant (NOAC) drugs as I haven't had broad experience at the time of writing although I am not aware of any major issues to date.

HYPERTROPHIC/KELOID SCARS

The management of scars is challenging. Prevention remains an important strategy by trying to avoid, when possible, invasive procedures in keloid prone areas such as upper chest/back particularly in the higher risk ethnic groups with pigmented skin. For established scarring, both the itch and hypertrophy can be improved with infiltration with triamcinolone 10mg/ml intralesionally using a locked needle to prevent "blowback". Very often, only small amounts can be injected; the procedure can however be repeated at 6 weekly intervals if there is a useful response. The technique requires no great technical skill and would be entirely applicable to general practice. Erythema in scars is best dealt with by lasers. I personally have had little success with silicone gels. A combined approach is often needed and funding can be an issue.



KELOID SCARRING POST CURETTAGE



MYCOLOGY

MYCOLOGY - this is a challenging area for our colleagues in Microbiology! Accuracy of diagnosis is enhanced by the provision of good specimen materials. This will save both time and expense and reduce the false negative rates. If fungal infection of hair bearing areas is suspected, hair should be plucked and scrapings obtained. These can be taken either with a blunt banana knife or a disposable toothbrush. If nail involvement is suspected, patients should **not** be asked to bring specimens in. Nails should be clipped back as proximally as possible with powerful nail clippers and any subungual debris harvested simultaneously. Skin punch biopsies specifically requesting fungal stains can also be helpful especially if more deep seated infections are suspected. A UV Woods light available in the surgery can help with the diagnosis of ectothrix fungal hair infections and also to distinguish erythrasma in flexural areas.

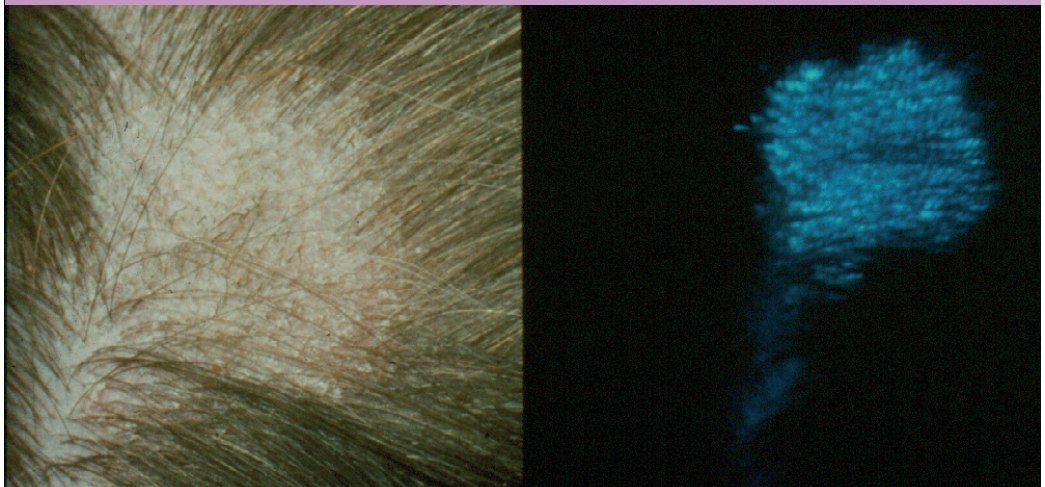
MYCOLOGY INSTRUMENTS



WOODS LIGHT



MICROSPORUM (ECTOTHRIX) WITH POSITIVE FLUORESCENCE UNDER WOODS LIGHT



CRYOSURGERY

CRYOSURGERY - as with other forms of surgery in primary care settings, less and less of this is being performed. It can be expensive to provide on-site and there are health and safety concerns around the transportation of liquid nitrogen in smaller devices. Misapplied cryotherapy is one of the most common causes for litigation in dermatological practice. It can be quite a destructive technique and careful consideration must be given to where on the body it should be used and in what skin types, to avoid damage to superficial anatomical structures and post inflammatory hypo- and hyper- pigmentation in darker skin types.

BLISTER AFTER CRYOTHERAPY TREATMENT



POST CRYOTHERAPY SKIN ULCERATION



Disposable auriscope fittings can be utilised to focus freeze and prevent lateral spread for smaller lesions. Protocols should be established and agreed and careful recording of freeze times made in the medical records.



DERMOSCOPY

DERMOSCOPY - this is a very exciting and cost effective additional tool proving increasingly popular and accessible for the primary care physician to improve the accuracy of skin lesion diagnosis, particularly in confirming a wide range of lesions as benign, thus reducing both cost to the NHS and anxiety for the patient. Training is required and the doctor, as in all aspects of his work, remains within his bounds of knowledge and competence. Both beginners and advanced courses are widely and regularly available through the Primary Care Dermatology Society as well as a wealth of information on the website (www.pcds.org.uk). There is also an online distance learning diploma available from the Dermatology Department of Cardiff University (dermatology@cardiff.ac.uk). Many CCGs are recognising the value of dermoscopy and are strategically equipping their GPs with both equipment and training.

HEINE DELTA 20 DERMATOSCOPE



ALLERGY TESTING

ALLERGY TESTING - it is beyond the scope of this article to go into any great depth in this respect; allergy testing, like histology, should most often be used to confirm what we already suspect from good history taking and examination.

1. Patch testing is carried out in Dermatology departments to identify +ve Type 4 antibody/antigen reactions. It is most useful in the investigation of face and hand eczemas, occupational dermatoses, leg ulcer reactions and also has a useful pick up rate in persistent pruritus ani/vulvae.²
2. Photopatch testing is only carried out in specialised centres when an allergy to light is suspected and is essentially a tertiary resource.
3. Prick testing is most commonly provided in Immunology departments for the investigation of Type 1 immediate hypersensitivity reactions (e.g. most urticarias).

TEACHING POINTS

1. If a vasculitic rash is suspected, beware of missing systemic involvement particularly renal.
2. A “leg ulcer” is not a diagnosis, it is a manifestation of an underlying disease process/processes.
3. Consider carefully the indications to biopsy and what you hope to achieve.
4. All tissue removed should be submitted for histological examination.
5. Good anaesthetic technique can hugely improve the patient experience.
6. Dermoscopy is a fantastically useful adjuvant tool to accurate lesion diagnosis.

REFERENCES

- 1: R. Fisher and S. Walsh; King's College, London; A review of dermatology primary care referral letters; BJD Vol 173 Supplement 1, July 2015 Pg.39
- 2: M.J. Abu-Asi, J. McFadden, I.R. White and J. White, St John's Institute of Dermatology, London: The role of patch testing in patients with perianal dermatoses and pruritus ani; BJD Vol 173 Supplement 1, July 2015 Pg.178



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References:

1. Gallagher J. *et al.* Poster presented at EADV Congress 2009.
2. Dermol Range – Total Unit Sales since launch. Dermal Laboratories Ltd. Data on file.

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