SKIN

MUSEUM CATALOGUE

Department of Pathology, University of Adelaide, 2004

SKIN

INTRODUCTION

Pathology is all about understanding disease – how it arises, its patterns, complications and how it causes symptoms and signs. That understanding of disease is aided by a having a visual appreciation of the morphological changes in tissues.

Powers of observation and description are not just of use in pathology. These are important when examining patients also. As soon as a patient walks into a room you should be observing them (are they fat, thin, pale, yellow, short of breath etc). Specific site, size, colour, texture, appropriate terminology etc are also important for describing lumps and skin lesions on a patient, and knowledge of pathological features is important in radiological diagnosis, so the observational and descriptive skills which you learn in pathology have a broader application.

The skin is composed of a superficial layer of keratinising stratified squamous epithelium with underlying connective tissue dermis and subcutaneous fat. The examples of pathology of the skin in the museum are for the most part quite straightforward, mainly covering common skin tumours (although often the tumours in the museum are unusually large examples).

HOW TO USE THIS CATALOGUE

This catalogue can be used as a tool to develop your knowledge, as well as provide an opportunity for revision.

It is divided into:

- Introduction and approach to specimens (pages 87-88).
- Index (pages 89-90). Examples of specific diagnoses can be found via the index.
- Core and classic disease processes (pages 91-96). This gives examples and discussion of core and/or classic diseases of the skin. These are the specimens that students should focus on being able to identify initially. However, it depends to some extent on what you have covered in lectures and practical classes or resource sessions as to what you should know. Some of the specimens and discussion are directed more towards clinical medical students.
- Main catalogue (pages 97-103). This section covers the specimens in numerical order. Questions and/or comments accompany some of the specimens to help you expand your knowledge. In order to fit more specimens in the museum, not all of the pots are in numerical order on the shelves, and large specimens are often found on the bottom shelves.

You might find it useful to work quietly with a few friends and to have a few textbooks handy (e.g. pathology).

You do not have to examine every single specimen in the museum. However, just as in clinical practice, you will not become proficient in diagnosing something if you have only seen one case. Exposure to a variety of cases (specific diagnoses can be found via the index) to experience the variability in morphology will help your learning greatly. In general red and blue dots indicate basic and straightforward cases, whereas yellow dots indicate a more complex case. This is not a hard and fast rule, and you will find yellow dot specimens turning up in resource sessions/practical classes and even exams, if they represent classic pathology.

As some of these specimens are very old (some up to 80 years), some of the investigations and treatments mentioned may be out of date.

BASIC APPROACH TO AND DESCRIPTION OF SKIN PATHOLOGY SPECIMENS

Students are expected to be able to give a brief succinct description of relevant macroscopic features of a specimen using appropriate terminology, as well as to arrive at a diagnosis or differential diagnosis. Even if not asked for a description, identification of relevant features is helpful in the diagnostic process. Your descriptive skills will improve with practice.

In any aspect of medicine, one needs to approach things in a systematic manner, otherwise important points may be omitted.

- Read the clinical history, it will often provide relevant information
- Look at the front of the pot first (i.e. the one with the number and the dot), but always make sure to look at the back and sides as well.
- Identify and orientate the tissue. Make sure you can recognize that it is skin and which side is the surface for example.
- Identification of and description of the abnormality.
  Most of the skin pathology specimens in the museum show abnormalities that are focal in nature. The description of a discrete or focal macroscopic skin lesion may incorporate a number of features:
  Size: Give an approximate measurement
  Colour: What colour is it? Is it all one colour or is it many colours or shades of one colour (variegated)? Does it look homogenous (all the same the whole way through)?
  Surface: Is it elevated from the surrounding skin? Is it ulcerated? Is the surface smooth, irregular or does it have a papillary configuration?
  Shape
  Border: Are the margins regular or irregular? Malignant lesions typically have irregular margins. Benign tumours typically have well-defined regular margins, although there are many exceptions.
- Diagnosis. State your diagnosis or differential diagnosis. Be as precise and specific as possible. Use any relevant clinical information given to help you. Sometimes a precise diagnosis is not possible but a presumptive diagnosis based on the macroscopic and/or clinical findings is. If you can't decide on one diagnosis, give a list of reasonable differential diagnoses, in order of decreasing likelihood, give a more general diagnosis (e.g. malignant tumour), or at least attempt to identify the pathological process.

INDEX: SKIN

CASE 50469/83

Mycosis fungoides
CASE 14486
CASE 18897

Metastases to the skin
CASE 13518

Haemangioendothelioma
Case 4493

Desmoid tumour (soft tissue)
CASE 1582/87

CORE AND CLASSIC DISEASE PROCESSES

SKIN: SQUAMOUS CELL CARCINOMA

CASE 1461

Clinical information
No clinical details are available.

Describe the specimen
The specimen consists of a right ear. An irregular fungating tumour measuring 4cm in maximum dimension arises from the lateral aspect. The tumour obstructs the external auditory meatus.

What is the diagnosis?
Carcinoma – probable squamous cell carcinoma (SCC)
(This tumour does not really look like a basal cell carcinoma or melanoma, the other common malignancies of the skin so it is probably a SCC).

What is the pathogenesis of this disease?
Squamous cell carcinomas generally arise in chronically sun-exposed areas of the body – UV light is the predisposing factor. Some cases probably arise from pre-malignant dysplastic lesions of the epidermis (solar or actinic keratoses), also caused by sun exposure. Immunosuppression is also a risk factor – SCCs arise more commonly in transplant recipients and AIDS patients for example, as is xeroderma pigmentosum. In certain parts of the world, chronic arsenic ingestion is a predisposing factor.

What is the prognosis of this disease?
Squamous cell carcinomas of the skin have an extremely good prognosis as they are usually diagnosed and treated early. Larger tumours and those with delayed diagnosis may metastasise, initially via local lymph nodes.

SKIN: BASAL CELL CARCINOMA

CASE 13484

Clinical information
The patient was a woman aged 79 who had an ulcer on the skin of the left deltoid region for 8 years. During the last 2 months it had increased rapidly in size.

Describe the specimen
The specimen consists of an ovoid portion of skin with attached subcutaneous tissue measuring 15 x 10 x 2cm. On the surface is an ovoid ulcer 10 x 6cm with pale raised edges and a smooth floor. At one end is a fungating firm nodule measuring 4 x 2.5cm which projects 1cm above the surface.

What is the diagnosis?
Basal cell carcinoma

What histological feature does this tumour type typically demonstrate?
Islands of tumour cells in the dermis typically demonstrate peripheral palisading - where the cells at the periphery of the tumour islands are lined up adjacent to one another just like basal cells of the epidermis – hence the name.

What is the main risk factor for this disease?
Chronic sun exposure.

What is the natural history of this disease?
These tumours almost never metastasise even when large. However, larger ones and certain subtypes can be deeply invasive and erode underlying structures.

N.B. They would rarely get as large as in this specimen.

SKIN: MALIGNANT MELANOMA

CASE 15229

Clinical information
The patient was a man aged 26 who had had a lesion on the right thigh for years, enlarging during the last 2 months. Inguinal lymph nodes were not involved. The lesion was widely excised.

Describe the specimen
The specimen consists of a rectangular piece of skin measuring 9 x 8cm with underlying subcutaneous tissue. In the centre is a brown, pigmented lesion 2cm in diameter with a papillomatous nodule 1.5cm diameter towards one side.

What is the diagnosis?
Malignant melanoma

What are the histopathologic features of an invasive malignant melanoma?
An invasive malignant melanoma comprises proliferations of atypical melanocytes in both the epidermis and dermis. In the epidermal component, in addition to junctional nests of atypical melanocytes, single atypical melanocytes spread upwards and outwards into the upper layers of epidermis (pagetoid invasion) or depending on the type, proliferate singly along the basal layer. Malignant epidermal and dermal melanocytes have large nuclei and moderate amounts of eosinophilic cytoplasm, sometimes containing visible fine brown pigment. Much of the pigment is, however, discharged from the cell and phagocytosed by macrophages.

What is in situ melanoma?
This is a lesion that demonstrates a proliferation of atypical melanocytes with atypical organisation within the epidermis only, without invasion into the dermis.

What are the different clinicopathologic types of invasive malignant melanoma?
The main ones are superficial spreading, nodular, acral lentiginous and melanoma arising in a Hutchinson's melanotic freckle. These are not thought to have prognostic significance.

What is the most important prognostic feature in malignant melanoma?
In the absence of metastases, the most important prognostic feature is the Breslow thickness: the depth of invasion measured histologically in mm from the point of deepest invasion in the dermis vertically to the granular layer (stratum granulosum) of the overlying epidermis.

What are some other common pigmented lesions?
- freckles and lentigenes
- benign melanocytic naevi
- basal cell carcinomas and seborrhoeic keratoses are often pigmented
- some angiomas appear pigmented because of their colour

SKIN: PILONIDAL SINUS

CASE 4210

Clinical information
No clinical information is available.

Describe the specimen
The specimen comprises an oval portion of skin measuring 6 x 3.5cm with underlying subcutaneous tissue. The specimen has been bisected through a punctum leading to a 3.5cm cavity containing hair beneath.

What is the diagnosis?
Pilonidal sinus

What is the pathogenesis of this disease?
These sinuses typically arise between the buttocks, generally in young people with dark hair. It is believed that hairs in the skin fold are pushed into the tissues, stimulating acute and foreign body type granulomatous inflammatory reactions with surrounding granulation tissue and scarring.

SKIN: NEUROFIBROMATA

CASE 3705

Clinical information
No clinical information is available.

Describe the specimen
The specimen comprises three rectangular portions of skin measuring up to 4cm in diameter. From each arises numerous pedunculated skin coloured nodular lesions measuring up to 2.5cm in dimension.

What is the diagnosis?
Neurofibromata

What is the pathogenesis of this disease?
These are benign lesions formed by a proliferation of elements of a peripheral nerve, including fibroblasts, Schwann cells, axons and often perineural cells. They may arise anywhere there are peripheral nerves. Patients with the genetic disease neurofibromatosis type 1 develop multiple neurofibromas. Malignant change (into malignant peripheral nerve sheath tumour) may occur in a small proportion of cases.

With so many lesions, this patient is very likely to have had neurofibromatosis type 1.