Pigmented Skin Tumors

Neville C. Davis, F.R.C.S., F.R.A.C.S.;
Roderick McLeod; Graeme Beardmore;
John Little, and Redmond Quinn

Between 1963 and 1968, all cases of malignant melanoma occurring in Queensland, Australia, were registered at the Research Unit of the Princess Alexandra Hospital as part of the Queensland Melanoma Project. The microscopic diagnoses were reviewed by a panel of pathologists whose agreement was required before the case was registered as proven. Since 1969, only selected cases have been registered but we have records now of more than 1,650 patients with malignant melanoma. This series forms the basis for this short paper.

Malignant melanomas may arise from blemish-free skin, from benign nevi or from a Hutchinson’s melanotic freckle. Females are affected slightly more commonly but have a better prognosis than males. The highest incidence occurs in the 30-59 year age group. It is very rare before puberty but not uncommon in the elderly. It is rare in black people, in whom it tends to occur on the soles of the feet or the mucosa. We have not found any marked predilection for its occurrence in people with a fair complexion, blue eyes, blond or red hair, and a tendency to sunburn easily.

A correct diagnosis of malignant melanoma can be made in a majority of cases by noting its clinical appearance in conjunction with a history of recent change. The tumor should be examined carefully in a good light with a magnifying lens. It is possible to diagnose melanomas at a biologically early stage, when treatment will give remarkably good results.

Since practitioners often have difficulty recognizing a malignant melanoma at first sight, and distinguishing it from the more commonly occurring pigmented skin tumors, the following exhibit offers practical information on the differential diagnosis of the following common lesions:

- Benign pigmented nevi (junctional, compound, intradermal and blue)
- Seborrheic keratosis
- Sclerosing hemangioma
- Pigmented basal cell carcinoma
- Hutchinson’s melanotic freckle
- Malignant melanoma
BENIGN PIGMENTED NEVI
Junctional Nevus

Clinical History:
The lesion may have altered in size or color but the change has been very slow.

Appearance:
1. Size—varies from a few millimeters to several centimeters.
2. Color—light to dark brown or black. May be speckled.
3. Surface—usually flat, smooth and impalpable.
4. Edge—irregular.
5. Hairless (usually).

Histology:
Nevus cells with a pronounced tendency to occur in clusters of five or more in the basal layer of the epidermis at the junction of epidermis and dermis.

Life History:
1. Arises from melanocytes in the junctional zone of the epidermis. The current theory of the origin of the melanocytes is that these cells migrate to the epidermis from the neural crest of the embryo, and therefore are derived from the neuro-ectoderm.
2. May evolve into—compound nevus—intradermal nevus—malignant melanoma
3. May remain inactive.
4. May regress.

NOTE:
1. Usually appears in the first few years of life but may occur at any age.
2. Often occurs in crops in adolescence.
Clinical History:
The lesion may have altered in size or color but the change has been slow. It may have become elevated.

Appearance:
1. Size—usually one centimeter or less, but may be large.
2. Color—brown to black.
3. Surface—almost invariably elevated and nodular.
4. Edge—may have a macular ring around the periphery.
5. Hairs may be present.

Histology:
Nevus cells both in the junctional zone and in the dermis.

Life History:
1. Develops from junctional nevus.
2. Commonly develops into intradermal nevus.
3. May develop into malignant melanoma.

NOTE:
1. May occur at any age.
2. The great majority of pigmented nevi in children are compound nevi.
3. May be clinically indistinguishable from intradermal nevus.
4. May bear a superficial resemblance to malignant melanoma by virtue of its raised center.
Intradermal Nevus

Clinical History:
The lesion may have altered in size or color but the change has been slow. It may have become elevated.

Appearance:
1. Size—usually less than one centimeter in size but may be huge as in "bathing trunk" nevus.
2. Color—skin color to light or dark brown.
3. Surface—usually raised. May be warty, flat and smooth, sessile or pedunculated.
4. Edge—regular.
5. Hairs often present and coarse.

Histology:
Nevus cells predominantly or entirely within the dermis—i.e., little or no junctional element.

Life History:
1. Develops from compound nevus.
2. Usually benign—rarely becomes malignant.

NOTE:
This is the common mole on face and scalp of adults.
Blue Nevus

Clinical History:
There is often no history of change.

Appearance:
1. Size—usually one centimeter or less.
2. Color—the most distinguishing feature—blue to blue-black or gunmetal.
3. Surface—smooth and hairless—skin seems to be stretched tightly over it.
4. Edge—usually well defined and regular in outline.

Histology:
Noncircumscribed collections of elongated melanocytes plus heavy accumulations of pigment situated in the dermis. More cellular, circumscribed and less pigmented variants are called cellular blue nevi.

Life History:
1. Develops in the dermis from melanocytes which are believed to have failed to complete their migration from the neural crest to the epidermis.
2. Almost always remains benign.

NOTE:
1. Occurs especially on face, dorsum of the hands and feet and on the buttocks.
2. The blue color is due to the refraction of light by the collagen fibers superficial to the pigment cells.
3. The pigment is melanin.
SEBORRHEIC KERATOSIS

Synonyms: Senile wart, acanthotic nevus, pigmented basal cell papilloma

Clinical History:
1. Lesion has usually remained unchanged, or the rate of change has been very slow.
2. Small pieces of the lesion may flake off with minor trauma, leading to slight bleeding.

Appearance:
1. Size—few millimeters to several centimeters.
2. Color—yellow, light brown, grey or black.
3. Surface—raised, warty and greasy usually, but may be flat and sessile or dry and rough.

Histology:
Proliferation of basal cells with epithelial cyst formation and hyperkeratosis. Melanocytes and melanin pigment may be present.

Life History:
1. Arises from basal cells of epidermis.
2. Almost always benign, but malignant transformation has been reported.

NOTE:
1. Usually occurs in adults with greasy skin, especially after middle age.
2. Very common on the trunk, face and neck.
3. Often multiple.
4. By far the most common tumor of the skin in persons of middle age or older.
5. Melanocytes incorporated in the proliferating basal cell clumps produce the pigmentation.
SCLEROSING HEMANGIOMA

Synonyms: Dermatofibroma, histiocytoma

Clinical History:
Lesion may have grown but the rate of change is very slow.

Appearance:
1. Size—usually less than one centimeter.
2. Color—usually pink but may be dark brown.
3. Surface—smooth and featureless.
4. Edge—regular, well circumscribed, slightly raised.
5. Usually hairless.

Histology:
A dermal collection of histiocytes, fibrous tissue, blood vessels and iron pigment, varying in their proportions from lesion to lesion.

Life History:
1. May regress and disappear.
2. Never becomes malignant.

NOTE:
1. Feels like "lead-shot" in the skin.
2. Usually occurs in adults.
3. Most common on legs of females.
4. The pigment is hemosiderin.
PIGMENTED BASAL CELL CARCINOMA

Clinical History:
1. The lesion has slowly increased in size, usually over a period of months or years.
2. May have slowly become darker.

Appearance:
1. Size—usually less than one centimeter.
2. Color—bluish-black and unevenly distributed.
3. Edge—raised and smooth, may be some tiny venules visible.
4. Surface—the early lesion is smooth but it later ulcerates and a depression occurs in the center.
5. Hairless.
6. On stretching exhibits dark pearly appearance.

Histology:
Malignant basal cells arising from the epidermis and invading the dermis.

Life History:
1. Progressive local tissue destruction.
2. Very rarely metastasizes.

NOTE:
1. Most occur on the head and neck of middle-aged people.
2. The pigment is of two kinds—melanin and hemosiderin. The former is due to incorporation of the melanocytes in the collections of tumor cells and the latter to hemorrhage from small vessels in the tumor.
HUTCHINSON'S MELANOTIC FRECKLE

Synonyms: Lentigo maligna, circumscribed precancerous melanosis

Clinical History:
1. Usually starts as a brown macule on the face of middle-aged persons.
2. Its rate of growth is unpredictable—it is usually very slow.

Appearance:
1. Size—may be less than one centimeter or cover almost the side of the face.
2. Color—usually uneven—brown with black or pale areas.
3. Surface—flat initially but the development of papules, plaques or nodules suggests malignant change.
4. Edge—irregular.
5. Hairs—usually absent.

Histology:
Proliferation of atypical melanocytes in the junctional zone. The cells tend to remain single without cluster formation. Pigment distribution is irregular. There is severe solar degeneration in the dermis.

Life History:
1. Develops from melanocytes at the junctional zone.
2. A significant proportion develops into frank malignant melanoma.

NOTE:
Malignant melanomata developing from these lesions are said to have a better prognosis than average.
Clinical History:
A history of change, particularly over a period of weeks or months, is of paramount importance in diagnosis. Any one of the following changes in a mole is suspicious and more than one often occurs:
1. Change in size of surface area.
2. Change in elevation—a flat lesion may become raised, palpable, nodular or pedunculated.
3. Change in color—a brown lesion most commonly becomes black. Some melanomas are flesh-colored or amelanotic.
4. Change in surface—it may become rough and scaly. It may ulcerate, ooze or bleed with minor trauma.
5. Itching or tingling may develop.

Appearance:
1. Size—varies from a few millimeters to several centimeters.
2. Color—usually black but may be brown, blue, grey, pink or skin color. There may be an uneven black speckling with some pale or nonpigmented patches.
3. Surface—usually raised and readily palpable with the finger tip. It may be roughened, scaly, crusted, opaque or ulcerated.
4. Edge—usually demarcated, may be irregular in outline or slightly inflamed.
5. Hairs—usually absent but not always.
MALIGNANT MELANOMA

Histology:
Cells cytologically malignant and the extent of invasion can be staged.

Stage 1 (Malignant melanoma in situ). The malignant cells are confined to the epidermis with no invasion of the dermis.

Stage 2 (Superficial malignant melanoma). Tumor cells invade the superficial or papillary layer of the dermis.

Stage 3 (Invasive malignant melanoma). Tumor cells invade the reticular layer of the dermis.

Stage 4 The tumor invades through the dermis into the subcutaneous fat.
Pedunculated tumors even without invasion of the reticular dermis have a poor prognosis.

Life History:
1. Occur in blemish-free skin, from pre-existing junctional or compound nevi, or from Hutchinson’s melanotic freckle.
2. Produces metastases by lymphatic and blood spread.

NOTE:
1. The term “melanoma” should be restricted to malignant tumors.
2. Extremely rare before puberty.
3. Most common site in females is lower leg; in males the back of the trunk.
4. Initial treatment is wide surgical excision. A skin graft is often necessary. Regional node dissection should be considered.
5. Incisional or partial biopsy is hardly ever indicated. If in doubt, excise the whole lesion to establish the diagnosis.
6. Remember the first excision is the most vital.