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MALIGNANT MELANOMA*

BY

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Pigmented lesions of the skin are very common and the vast majority of them are harmless. Malignant melanoma is rare—only about 3% of all skin cancer—and at times very difficult to distinguish from the benign pigmented mole. Malignant melanoma has a very grave outlook and yet the prognosis of an individual patient is unpredictable, as spontaneous regression even in the late stages of dissemination is known. Five-year survival rates are of less significance in malignant melanoma than in other types of cancer, as many patients die in the sixth to tenth year, although the majority are lost in the first two years. In diagnosis the personal opinion of the clinician and that of the histologist are often at variance, and in the management of the patient there is the gulf between conservatism and radicalism. This black lesion has indeed cast over the profession and the educated patient a dark pall of uncertainty and the gloom of fear. The most important recent contributions on the histogenesis and pathology of these tumours are those of Spitz (1948, 1951), A. C. Allen (1949), and Allen and Spitz (1953) based on their unrivalled experience at the Memorial Hospital, New York. Their studies on the correlation between histological findings and clinical course resulted in a reorientation of the rationale of treatment.

The experience of 132 cases of malignant melanoma seen at Westminster Hospital has been reviewed in the light of this modern concept, and this has proved of value in achieving greater accuracy in diagnosis and as a guide in the selection of the most suitable method of treatment.

Histology of Pigmented Skin Lesions

The theories as regards the origin of pigmented skin lesions, epidermal or neurogenic—are well known, and to-day the majority of pathologists accept the epidermal theory. This, however, has no practical influence on the management of patients. It is now accepted that the histological types fall into one of four groups: (1) the junctional; (2) the intradermal; (3) the compound; and (4) the blue naevus. The recognition of these varieties is of practical importance and of prognostic significance.

The *junctional naevus* is so named as histologically the naevus cells are seen in the basal layer of the epidermis at its junction with the dermis; from there the tumour is seen to spread to the surface through the stratum spinosum, granulosum, and corneum. At the periphery of the main lesion there is often to be seen a superficial spread where the cells are separated from the main lesion by areas of normal epithelium. This is of importance, as an apparently complete surgical removal showing normal epithelium beyond the naevus may still have left naevus cells at the periphery. Histologically the lesion must be distinguished from other intra-epidermal growths such as the keratoses, Bowen's disease, and Paget's disease. The degree of pigmentation varies.

The *intradermal naevus*, as its name implies, is situated entirely in the dermis; neither the epidermis nor the junctional areas are involved, although the epidermis may be atrophic. The naevus cells form masses without any encapsulation and often penetrate into the subcutaneous fat; pigmentation is usually less marked or absent in the deeper parts of the lesion.

The *compound naevus* was so named by Allen (1949) to define those naevi composed of two elements—junctional and dermal; it is much more often found in children than in adults.

The *blue naevus* differs from the other varieties as the main cellular element is a spindle cell; the arrangement in whorls or fascicles is common and its neurogenic origin likely. Pigmentation is marked, hence the name. The lesion is always situated in the dermis.

Clinical Features

The clinical features and the malignant potentialities of the four types are now clearly recognized. They can be briefly summarized as follows:

The *junctional naevus* is a pigmented lesion of every shade of brown; it varies in size, is smooth, nearly always flat, and hairless. It may occur on any part of the skin, but those on the palm of the hand, the sole of the foot, and the genitalia are always "junctional" in type. It is the "immature" naevus (Hicks, Rank, and Wakefield, 1955). It is not uncommon in children. Allen (1949) and Allen and Spitz (1953) emphasize its relationship to malignant melanoma. Quiescent junctional naevi may become active; "activity" in junctional naevi or in the junctional component of a compound naevus is recognized histologically by nuclear anaplasia, hyperchromatism, increase in nuclear size, mitotic figures, and subepithelial lymphocytic infiltration. Such changes *in an adult* are considered precancerous, and such lesions are potentially malignant

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melanomata. Although only a very small proportion of junctional naevi develop into malignant melanoma, Allen and Spitz draw attention to the fact that "with the exception of a few malignant blue naevi, every melanocarcinoma of the skin or mucous membrane arises from a junctional or compound naevus."

The *intradermal naevus* is the commonest variety and nearly all "common moles" belong to this group. Its colour, like that of the junctional naevus, varies from light to dark brown. It can be flat and smooth or papillary and warty. The hairy mole is always of the intradermal type. It is the most stable variety and does not undergo malignant changes. It never occurs on the palm of the hand, the sole of the foot, or the genitalia. Pigmented lesions in these sites should therefore be presumed to be other than the intradermal type. They are rare before puberty and become more common with increasing age. The intradermal naevus is the "mature" pigmented skin lesion (Hicks *et al.*, 1955)

The *compound naevus* is clinically indistinguishable from the intradermal one. Its incidence according to Allen (1949) is 12% of all naevi in adults and as high as 98% in children. The junctional element of the compound lesion renders it potentially dangerous. When a hairy mole spontaneously loses the hair it can be presumed that there is a compound element and that the junctional part has become active. It is estimated that less than one in ten malignant melanomata arise from a pre-existing compound naevus; whereas nine in ten arise from junctional naevi.

The *blue naevus* occurs most commonly on the face, on the dorsum of the hands and feet, and on the buttock. It is dark brown, blue, or black in colour and nearly always hairless and smooth. Its malignant variant is extremely rare and is described as a melanosarcoma.

Juvenile Melanoma

It is now well known that a pigmented skin lesion occurring before puberty may have histological features indistinguishable from malignant melanoma and yet pursue a benign course clinically. Such lesions have been described by Spitz (1948, 1951) under the name of juvenile melanoma and by Pack (1948) as pre-pubertal melanoma. The discrepancy between histological findings and clinical course has attracted a great deal of attention. McWhorter and Woolner (1954) reviewed all the cases of pigmented skin lesions in children at the Mayo Clinic and found 11 patients previously diagnosed as malignant melanoma who came into this group. Spitz maintains that histologists of great experience can differentiate the malignant melanoma from the juvenile melanoma in almost but not all cases. The occurrence of true malignant melanoma in the pre-puberty patient is very rare, and McWhorter and Woolner summarize 18 such patients varying in age from 3 to 12; of these, 12 had died of the disease. It is important to recognize juvenile melanoma as a clinical and pathological entity, as it influences treatment. Thus in the pre-puberty patient conservative surgery is always indicated. It should also be remembered that this variety may occasionally persist after puberty and is known to occur in adults. Allen and Spitz (1953) point out that the post-pubertal juvenile melanomata are always diagnosed as malignant melanoma and that this erroneous diagnosis leads to disproportionately radical surgery and also falsely raises the cure rate of malignant melanoma.

The juvenile melanoma may occur on the trunk or on the limbs, but the most frequent site is the face. The lesions vary in colour from yellow to brown, are hairless and warty. Histologically they show the features of malignant melanoma.

Malignant Melanoma

This is a rare condition. Willis (1948) found only 9 cases in 1,200 cancer cases submitted to necropsy. They account for 3 to 4% of all skin cancer. In a period of 27 years there have been 132 cases of malignant melanoma at Westminster Hospital. The age incidence is shown in Table I.

TABLE I.—*Age Incidence of* 132 *Patients with Malignant Melanoma*

Age:	0–20	21–30	31–40	41–50	51–60	61–70	71–90
No. of patients	9	29	25	25	25	9	10

The majority of malignant melanomata occur on the skin; those in the eye form a separate entity. Primary malignant melanoma may originate in mucous membrane; the common sites are the nasal cavity, the mouth, the ano-rectal junction, and the urethra. The intestinal lesions may be primary, but may also be metastatic (even when solitary) from a small undetected skin tumour, or from a tumour previously excised and not recognized as a melanoma. Melanomata of the larynx and bronchus have been recorded. Malignant melanoma on the head and neck seems to be of a less sinister prognosis, and in this site five-year survivals are more frequent than with lesions on the limbs. No part of the skin is immune, but there is a preponderance in certain sites. Table II shows the anatomical distribution in this series; it coincides with other published series. The lower limb, specially the sole of the foot and ankle, are common sites; this may be related to the fact that the junctional type of naevus is also common on the sole of the foot.

TABLE II.—*Site Distribution in Malignant Melanoma* (132 *Patients*)

Site	Incidence
Lower limb	62
Head and neck	24
Trunk	20
Upper limb	17
Unknown primary	4
Mouth and nose	3
Genitalia	2

Clinical Features

The lesion is generally of the low warty type with a macular edge. It often is quite insignificant, and its removal may even be entirely forgotten by the patient by the time metastases develop. The alteration of a benign birthmark into a malignant melanoma is heralded by an increase in size by peripheral spread, increased pigmentation, increase in bulk from the surface, a nodularity, oozing of serum which forms a crust, bleeding either from slight trauma or spontaneously, and by the appearance of minute satellite pigmented spots at the periphery of the lesion. In the papillary type rapid increase in size leads to the formation of cauliflower masses, some of the new tissue being quite devoid of pigment. Some masses ulcerate and the ulcer discharges serum.

Spread of Malignant Melanoma

These tumours spread by lymphatic permeation, by emboli to lymph nodes, and by blood-stream dissemination. The spread is unpredictable, and there is no other tumour as malignant as the melanoma and with such power of dissemination. Lymphatic permeation is common, and manifests itself by the formation of numerous cutaneous and subcutaneous nodules (Fig. 1) some deeply pigmented, others devoid of pigment. These nodules spread with the lymph flow; the number of nodules increases, they grow in size, some lose their pigment and become chamois-leather coloured; coalescence of nodes occurs and leads to the formation of tumour masses oozing a serous discharge. Lymph-node metastases occur sometimes without formation of satellite nodules, as if emboli were carried direct by the lymph stream to the lymph nodes (Fig. 2).

In no other malignant growth is the blood dissemination so widespread; every tissue and organ can be invaded. Nodules develop in the liver, lungs, brain, spleen, kidneys.

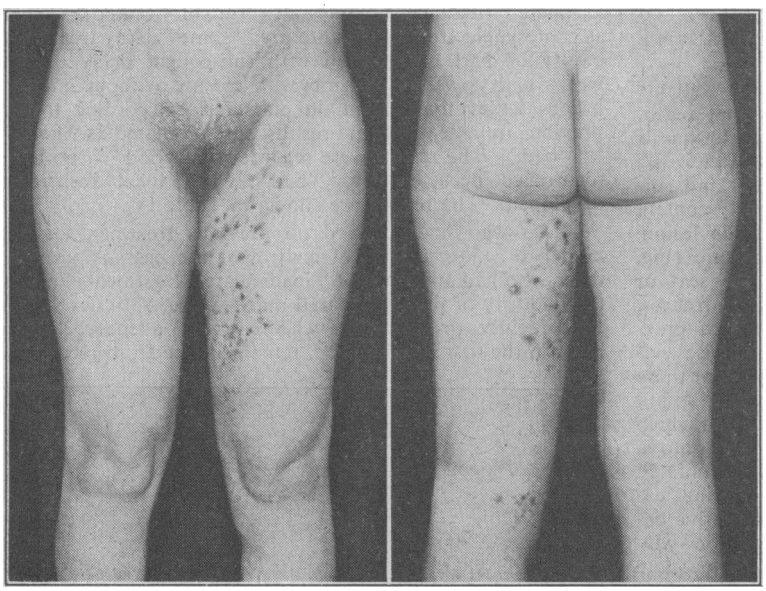

FIG. 1.—The primary tumour was on the front of the left leg. Metastatic spread by permeation of the subcutaneous lymphatic plexus. It illustrates the futility of removing a " strip " of skin between the primary site and the main regional lymph nodes in limb lesions.

wall and mesentery of the alimentary canal, the intestinal mucosa, and in the heart itself, in the myocardium, the chordae tendineae, and the valves. Freely circulating melanin in the blood leads to deep discoloration of the skin and mahogany-coloured urine. Mucosal metastases in the mouth and the rectum form large fungating tumours devoid of pigment. Skeletal metastases in any bone can occur. The course of the disease is unpredictable; some tumours show a periodicity of growth with intermittent quiescence; some lesions lose their pigment and regress whilst the disease continues to spread. The survival period varies; one-third of the patients died within the first two years and one-sixth within the first year. The virulence of the disease is great and the control of it very difficult. Cures are exceptional; a five-year survival is no indication that reactivation of disease will not occur. The survival periods in this series of patients are shown in Table III.

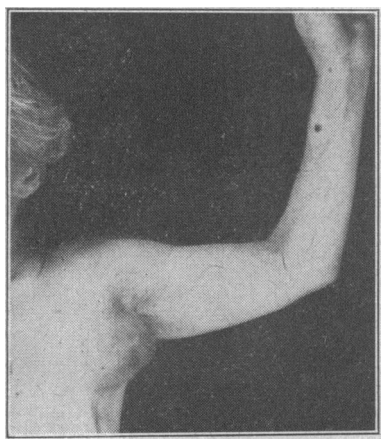

FIG. 2.—Small primary growth on forearm with extensive axillary lymph-node involvement. No intervening lesions. Metastatic spread by lymphatic embolism.

TABLE III.—*Malignant Melanoma Survival in* 132 *Cases*

	Alive	Dead
1st year	16	21
2nd "	12	26
3rd "	11	9
4th "	2	6
5th "	6	2
6th to 10th year	9 (4 with disease)	5

Seven patients were untraced.

Only 14 patients survived five or more years; of these, five died between the fifth and tenth year with disease; four are alive more than five years with disease; and five remain free from recurrence more than five years.

Hormonal Influence

The hormonal influence on pigment formation and on the depth of pigmentation in existing pigmented skin lesions has been recognized for many years. More recently Lerner, Shizume, and Bunding (1954) have shown that the melanocyte-stimulating hormone of the pituitary (M.S.H., or intermedin) causes darkening of the human skin and of pigmented moles, and may also cause the formation of new pigmented skin lesions. Depigmentation following cortisone administration is believed to be due to the inhibition of the pituitary. In pregnancy there is increased production of M.S.H., and the areas of increased pigmentation correspond accurately to those found in untreated Addison's disease with the addition of the areola and genitalia.

The rarity of malignant melanoma in children, the benign course of juvenile melanoma before puberty, and the increase of virulence of malignant melanoma in pregnancy all suggest that there is some hormonal influence or control, yet there is no evidence that the transformation of a harmless pigmented mole into a malignant melanoma is initiated or caused by hormonal action any more than there is proof that pregnancy can cause mammary cancer, although it is obviously patent that pregnancy will aggravate breast cancer. Hence, although it is accepted that prognosis of malignant melanoma is even worse in pregnancy than otherwise, termination of pregnancy does in no way improve the prognosis or lead to regression of malignant melanoma. Spontaneous regression of disseminated malignant melanoma after delivery has been recorded (E. P. Allen, 1955), but other instances of spontaneous regression without the added factor of pregnancy and in men are also reported (Sumner, 1953; Levison, 1955). Neither has treatment with androgens and oestrogens or the few trials of gonadectomy and adrenalectomy altered the course of established melanotic tumours. It remains to be seen if hypophysectomy will control malignant melanoma or merely result in its transformation into an amelanotic melanoma. The problem remains unsolved, but there are several practical implications as regards the management of pigmented skin lesions in children and in pregnancy. These can be summarized as follows:

1. Parents can be reassured that pigmented lesions are not dangerous before puberty. Their removal is dictated for cosmetic reasons and as a prophylactic measure, as some of these lesions may become dangerous in later life. Local excision with a small margin of normal tissue is adequate. Segmental resection of very large lesions is safe.

2. Pack (1948) suggested that the antenatal examination of pregnant women should include a survey of any pigmented lesions. Those on the genitalia and on the feet, known to be potentially dangerous, should be excised. The dark moles exhibiting activity, such as marked increase in size or pigmentation, should be excised. Patients who have had a malignant melanoma should be advised to avoid pregnancy for three to five years. Termination of pregnancy in patients with malignant melanoma is not indicated.

Management of Malignant Melanoma

It has been repeatedly stated that tragic results follow incorrect treatment. Tod (1944) rightly condemns " casual excision, ligature, or cauterization "; Ewing (1934) draws attention to the fact that " familiarity with these apparently insignificant lesions constantly invites meddlesome interference by patient, surgeon, dermatologist, and other specialists "; and Sylvén (1949), from the experience of 341 cases at the Radiumhemmet, concludes that " great harm was done by doctors, chiropodists, and beauticians who treated early

cases of malignant melanoma by freezing, caustics, and electric needling, whereby diagnosis and adequate therapy were delayed."

The review of the clinical histories of the 132 patients treated at Westminster Hospital shows clearly that often, even to-day, the initial management of pigmented lesions is poor and that "tinkering" is not confined to "beauticians" and chiropodists. Doctors and surgeons are far too frequently content with a local excision of the lesion, often under a local analgesic (Fig. 3). Small linear scars, the seat of sinister black satellite recurrences, bear witness to this form of practice. Yet there is no definite evidence, only a presumption, that these interferences with a pigmented lesion were actually the trigger action which transformed a benign lesion into a malignant melanoma and initiated the malignant process with an explosive violence. An alternative explanation is that the reason why advice was sought and inadequate treatment received for a pigmented lesion present for "as long as I can remember" is that the malignant metaplasia had already begun and that inadequate treatment merely failed to control it.

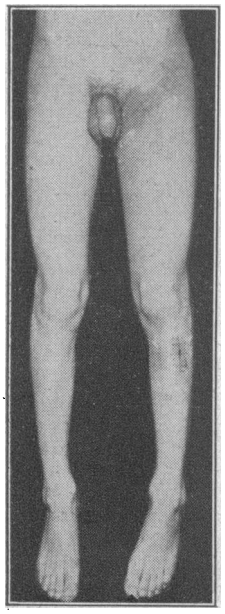

FIG. 3.—An example of "inadequate" treatment. A small linear scar at site of primary growth below the knee. A small scar in the right groin. Inguinal lymph nodes were palpable deep to the scar. Such treatment offers no chance of controlling the disease.

Treatment of the Primary Growth

All new pigmented lesions in adults showing activity, as distinguished from senile keratosis, pigmented rodent ulcers, or epithelioma, must be looked upon as potentially malignant melanoma. The period of "activity" in pre-existing so-called moles or pigmented naevi may vary from six months to five years, and two or three years of active growth has been noted in 29 patients of this series, or 22%.

The treatment in such cases should be wide excision. The larger the lesion the wider the excision; this should include a margin of 2 cm. in small lesions and 3 cm. or more in lesions exceeding 2 cm. in diameter; in depth the excision must include the deep fascia (Fig. 4).

If this principle is followed, only the very small melanomata can be excised and the wound closed without a skin graft. In most lesions a graft is essential if the excision is to be wide enough. This is brought out quite clearly from the study of 112 patients who lend themselves to a detailed analysis. These patients were subdivided into three groups: (1) Those who had had no previous treatment when first seen. (2) Those who had had "adequate" previous treatment to the primary growth and were referred for post-operative management or for the treatment of metastases, without local recurrence. (3) Those who had received "inadequate" treatment before being seen at Westminster Hospital. The definition of "adequate" treatment was: excision wide enough, and no local recurrence. "Inadequate" treatment includes all forms of "tinkering" such as cautery, electrolysis, diathermy, "some" *x*-ray treatment, biopsy of part of a lesion with subsequent delay of two weeks and upwards, excision with closure without graft in lesions larger than 2 cm. in diameter. According to the previous treatment the end-results were tabulated as "good" or "bad." The results were regarded as "good" if no local recurrence occurred and "bad" when local recurrence developed. The results are shown in Table IV.

TABLE IV.—*Results According to Previous Treatment* (112 *Patients*)

Previous Treatment	Results of Definite Treatment	
	Good	Bad
None	13 (50%)	14 (50%)
Adequate	11 (42%)	15 (58%)
Inadequate	16 (27%)	43 (73%)

"Good" and "bad" apply only to primary growths, not eventual dissemination.

Those who had received no previous treatment of any kind had a 50% chance of control of the primary growth; those who had any form of "inadequate" treatment—in fact, the majority of patients—fared much worse, 73% developing local recurrences. Of those who received "adequate" treatment in the first instance 42% remained free from recurrence

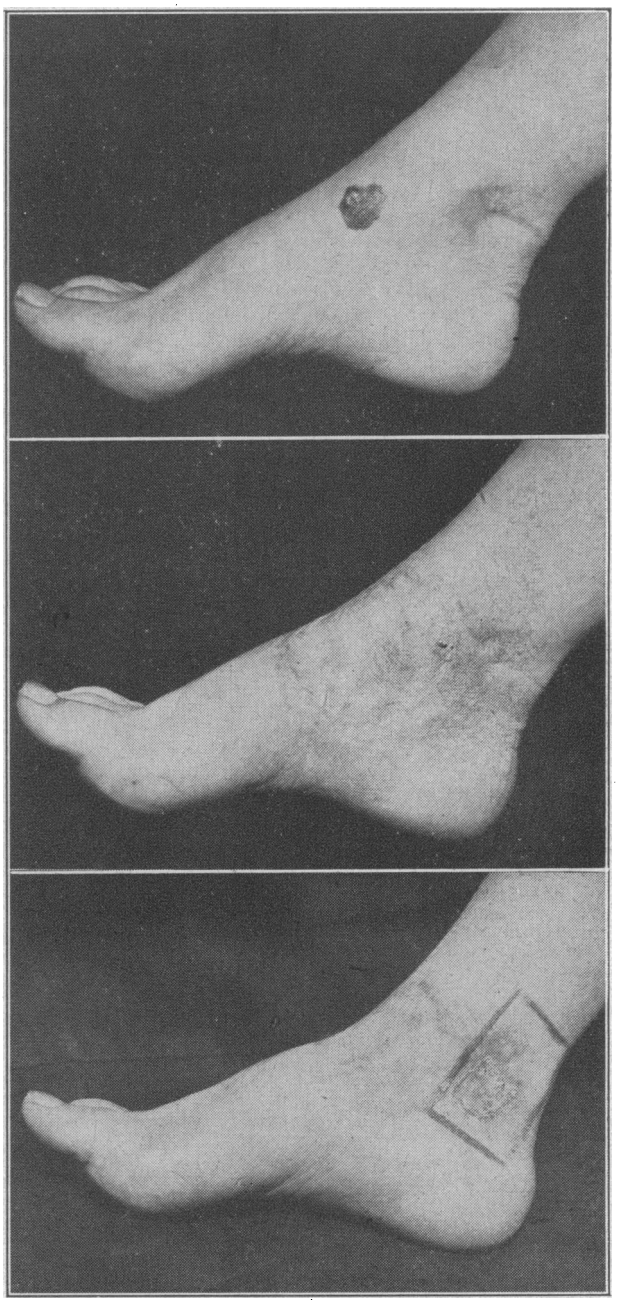

FIG. 4.—"Adequate" and "inadequate" excision. The linear scar above the tendo Achillis indicates that excision was inadequate, as a recurrence developed in the vicinity. This was widely excised and grafted—yet not quite wide enough, as the scar of the first operation should have been included. A further local recurrence in the original linear scar developed; the area to be re-excised is indicated.

in the vicinity of the primary growth. It is emphasized that this subdivision into "good" and "bad" results does not refer to the ultimate five-year survival or to lymph-node or blood-borne metastases. It indicates solely the possibility of controlling the disease at the primary site according to the initial treatment. But the initial treatment profoundly influences the prognosis. Most patients in whom the initial treatment was inadequate are in fact beyond help. Preston *et al.* (1954) found in their series of 225 patients that when the initial treatment failed to control the primary lesion the five-year survival rate was 1 patient among 58, or only 2%. The experience at Westminster Hospital has fully supported the importance of the initial treatment.

Problem of the Regional Lymph Nodes

Patients with malignant melanoma can be subdivided into those with and those without clinically enlarged lymph nodes.

Nodes not Involved

The grim outlook of the disease focused attention on the question of prophylactic block dissection in the absence of clinically enlarged lymph nodes. In favour of prophylactic dissection are the following points: (1) the fallibility of clinical assessment of enlarged lymph nodes; (2) the much worse prognosis in patients with enlarged lymph nodes; and (3) the occurrence of lymph nodes in 42% of patients in whom "no glands" was followed by "no action." Against prophylactic block dissection is mainly the fact that only a few sites are suitable for prophylactic block in continuity

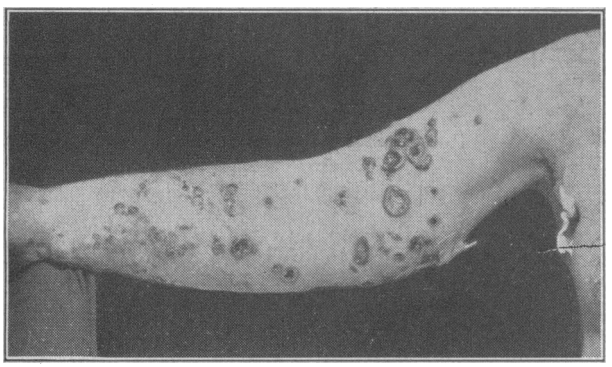

FIG. 5.—Primary growth was a subungual melanoma of the thumb. Local excision was followed by local recurrence. Amputation of the terminal phalanx of the thumb was followed by the removal of axillary lymph nodes. Between these two sites widespread permeation of the subcutaneous lymph plexus occurred. This was followed by widespread blood-borne metastases.

with the primary site—such as the face and neck, and the pectoral or scapular areas when the lesion is well away from the midline. However, in the common site—the limbs (and the commonest site is below the knee)—a prophylactic block is remote from the primary site and leaves a large intervening area with an extensive deep lymphatic plexus potentially invaded. The removal of a "strip" of skin from the primary growth on the foot (or the hand) up to the main regional lymph node areas is a futile gesture, if the anatomy of the lymph vessels is kept in mind (Figs. 1 and 5). The results of treatment were therefore analysed according to the presence or absence of glands, and the performance of block dissection or an expectant policy. Table V shows the

TABLE V.—*Results According to Lymph-node Management*

	Good	Bad	Total
No glands and no block	27 (57%)	20 (43%)	47
Glands involved. Block performed	8 (23%)	27 (77%)	35

results; "good" indicates control of the disease for at least two years and "bad" indicates recurrence of disease at the site of the "block" or proximal to it. It does not refer to blood-borne visceral or skeletal metastases.

It seems, therefore, that the best results were obtained in early cases from wide local excision without block dissection of the regional lymph nodes. An "expectant" policy in cases without lymph-node involvement showed that 43% of patients subsequently developed lymph nodes, and that a "block" performed for fully established lymph-node metastasis failed to control the disease in 77% of cases. The conclusion, therefore, is that a block dissection *in continuity* with a wide excision of the primary growth (feasible only in certain anatomical sites) is the method of choice.

Nodes Involved

As already stated, when the patients develop metastatic lymph nodes the prognosis is very bad; in this series a radical block dissection gave a satisfactory result in only 23%—that is, a 23% survival of at least two years (a very modest achievement). The result in 70 patients assessable for five years or more shows only a 20% survival, and, as already stated, of these 14 patients five died in the sixth to tenth year from recurrence, four are alive more than five years with the disease, and only five (7%) are alive from five to ten years free from the disease. Cunningham (1952), from a review of the literature, states that patients with palpably involved regional nodes have only a 5% five-year survival. In view of this the question of wide limb ablation advocated by Pack and Scharnagel (1951) must be given serious consideration (Fig. 5). Against such procedures are the facts that blood-borne metastases are not controlled by it, that not infrequently local recurrences develop in the amputation flaps and proximal to it, and that neither a forequarter nor a hindquarter amputation prevents further lymph-node involvement in the neck, the mediastinum, and the abdomen. It seems clear that there is not enough evidence to justify the adoption of wide limb ablation as a routine; it is justified only in exceptional cases and as a palliative measure in patients with the burden of a widely affected limb.

Other Methods of Treatment

Although it is generally recognized that malignant melanoma is a radio-resistant tumour, authentic regression of lesions has been recorded after radiotherapy (F. Ellis, 1939; Cade, 1952). It has a place in a small proportion of patients as a supplementary measure following operation, as a palliative, and when surgery is inapplicable. Chemotherapy has also been tried, and occasionally nitrogen mustard or Haddow's compound C.B.1348 has proved of temporary value. Adrenalectomy in a few cases has proved a failure and there are as yet no reports on hypophysectomy. Surgery, however poor the results (20 to 30% of five-year survival in most reported series), remains the most effective weapon.

Summary and Conclusions

In a period of 27 years, 132 patients with malignant melanoma have been treated at Westminster Hospital; of these, 122, fully documented and histologically proved, were followed up to date or to death, and seven could not be traced. I personally treated 82 of these patients; the other 50 were under the care of my colleagues, to whom I am indebted for the use of the notes and sections and the opportunity of seeing some of their patients. Treatment consisted of wide local excision and block dissection in a selected number of cases. A review of this series of patients leads to the following conclusions.

1. The initial treatment is of vital importance. A strong plea is made that no patient should be submitted to minor excisions, biopsies, or other interference, as these result in a negligible chance of survival.

2. The prognosis in children is much better than in adults, even when the histological findings are those of a highly malignant growth. The "safe" period for the local removal of pigmented lesions is before puberty.

3. Pregnancy activates pigmented lesions, and the prophylactic removal of pigmented moles in dangerous sites (feet, hands, genitalia) in the early months of pregnancy is advisable. Prognosis of malignant melanoma in pregnancy is bad. Termination of pregnancy is not indicated, although remissions and regressions after delivery are recorded.

4. Wide local excision of the primary growth is the only treatment which offers some prospect of permanent control of the disease.

5. Prophylactic block dissection in the absence of enlarged lymph nodes is always indicated when it can be done in continuity with the excision of the primary growth. It is probably indicated in other sites too, although less likely to control the disease, as the intervening untouched area may develop lesions. Removal of a "strip" of skin as a bridge between the site of the primary growth and the main lymph nodes is not considered a reasonable or sound procedure.

6. The presence of enlarged lymph nodes from distant lesions in the limbs raises the problem of amputation. There is to date not sufficient experience to recommend it as a routine measure.

7. Spontaneous regression of widely disseminated lesions has been recorded. Prognosis is therefore unpredictable in any individual patient. In the absence of visceral metastases, repeated surgical attack and major mutilating procedures are justifiable.

8. The commonest error in the management of malignant melanoma in adults is to do too little. Delay before definitive treatment is achieved is common.

9. Radiotherapy is of value as a post-operative measure and as a palliative treatment in cases which are not amenable to surgical excision.

I thank my colleagues for the opportunity of seeing some of their patients and Dr. Peter Hansell for the photographs.

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Vladimir Bechterev, the Russian neurologist, was born on January 20, 1857. He began his studies during a vital period in the development of neurology. In 1885, while a pupil of Flechsig in Leipzig, he described the superior vestibular nucleus which bears his name. He returned to Russia, where he was appointed to a chair at Kazan. Moving to St. Petersburg (1893), he entered the most fruitful period of his career. He made valuable contributions to the knowledge of cerebral localization, experimental psychology, and clinical neurology. A colleague of Pavlov, he studied the relationship between brain and behaviour, but as an anatomist, experimental psychologist, and clinician rather than as a physiologist. After 1905 he concentrated on the problems of abnormal social behaviour. He died in 1927.

ARE ALL "T's and A's" REALLY NECESSARY?

BY

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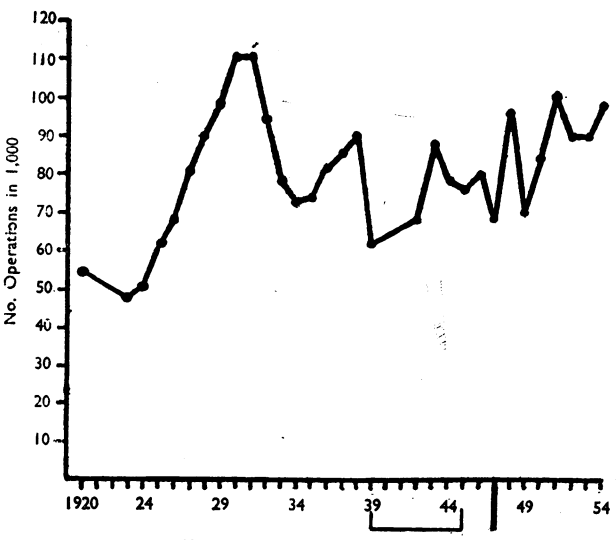
We pride ourselves that we live in a scientific and a rational age, yet many apparently unscientific and irrational procedures based on faulty premises, uncontrolled impressions, and rash conclusions still obtain.

A good majority of these procedures are carried out on young children (who have little chance to voice their opinions) and include various orthopaedic procedures, circumcisions, treatment of naevi, and removal of tonsils and adenoids. Of these, removal of tonsils and adenoids is by far the most frequently performed operation on the human body, accounting for one-third of all surgical operations carried out in the U.S.A. since 1924 (Boies, 1948).

Are all these procedures really necessary? Do one-third of our children really require to have their tonsils and adenoids removed? Why has this century seen such a savage attack on these normally present and easily accessible structures? There has been much discussion on this topic over the years amongst paediatricians, physicians, surgeons, family doctors, and even the lay public, but in spite of this there is still no uniformity of opinion. The surgeons seem most convinced of the benefits of the operation, whilst others regard the procedure as "a prophylactic ritual carried out for no particular reason with no particular result" (Medical Research Council, 1938).



Year:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
No. ops. in 1,000	55			48	50	61	68	81	92	98	110	110	96	78	73	74	81	84

Year:	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
No. ops. in 1,000	90	63			68	87	77	76	79	67	96	69	85	101	90	90	99	

FIG. 1.—Numbers of tonsillectomies carried out in elementary and primary school children annually in England and Wales, 1920–54.