THE YALE JOURNAL OF BIOLOGY AND MEDICINE 48, 417-422 (1975)

The Surgical Treatment of Cutaneous Melanoma

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Received August 8, 1975

INTRODUCTION

Most surgeons find security in performing a standardized procedure for a specific type of disease process or tumor. Malignant melanoma has never lent itself to this concept. However, the previous excessively evil reputation of malignant melanoma has been brought into truer perspective by the histologic staging of the disease (1–5). It can be said that the microstaging of cutaneous melanomas has not only been useful for predicting the incidence of eventual lymph node metastases and overall prognosis but also has brought some surgical "order out of chaos." The levels of invasion by melanoma now give the most information to the surgeon concerning necessary extent of surgery and prognosis (4, 5).

SPECIFIC LESIONS

Frequently, the child or adult patient is seen by the surgeon for treatment after biopsy by the referring physician. In these cases, the surgeon relies only on the pathologic diagnosis and systemic examination. However, he must recognize not only the clinical manifestations of cutaneous melanoma but other specific lesions that may at times mimic the appearance of melanoma.

Benign Juvenile Melanoma

This lesion is usually a nonpigmented, pale red, papular lesion occurring before puberty (6). In about 15% of cases, it is observed initially in adolescence or adulthood and often is confused with a hemangioma (7). It is important to recognize this benign lesion to avoid unnecessary radical operative procedures.

Blue Nevus

This is a firm, well-defined intradermal nodule composed of dermal melanocytes. Although malignant degeneration in blue nevi is rare, malignancy can occur in lesions that clinically resemble a blue nevus (8).

Halo Nevus

This term is used to describe a pigmented nevus surrounded by a zone or margin of depigmented skin (9). It has a life history that includes centripetal extension of the depigmented halo and the spontaneous disappearance of the nevus (10). Most commonly, this process is found on the trunk of young Caucasians. It is postulated that the depigmentation and disappearance of the nevus is based on an immunologic reaction (11). No surgical treatment is required.

Giant Pigmented Nevus

This is a congenital, pigmented hairy lesion that sometimes demonstrates a tendency to occur in the distribution of dermatomes. It may occur in the bathing trunk area, vest, sleeve, or in a stocking pattern. It most commonly occurs on the head or pelvic areas. The risk of malignant degeneration in such lesions is well known, and prophylactic resection and skin grafting are now considered mandatory in order to prevent transformation into malignant melanoma (12–15). Because the area encompassed by such lesions may be huge in comparison with the total surface area of a child, staged excision and grafting may be required. It is important to remove some margin of seemingly normal skin beyond that indicated by the presence or absence of pigment in these giant nevi because melanocyte proliferative activity is frequently more extensive than is visually apparent. Retrospective studies have shown the malignant potential of giant pigmented nevi varies from 2 to 42% (13, 15).

Pigmented Nevi on Palms and Soles

Routine excision of pigmented nevi in certain anatomic locations such as the palms and soles has been advocated as a prophylactic measure in the prevention of malignant melanoma. Pigmented palmar and plantar nevi do show proliferative activity at the dermo–epidermal junction at a later age than nevi of other sites (6). Their incidence increases progressively in the first two decades of life, reaches a peak in the third, declines thereafter and parallels the biologic life cycle of the nevus cell. One study of 10,000 men revealed at least one pigmented nevus on the palms and soles (or genitalia) of 14.9% of the patients (16). Routine excision of pigmented nevi on palms and soles is not practical because of the large volume of patients and unwarranted because the progression to melanoma of these nevi has never been proven conclusively (17).

Melanotic Freckle of Hutchinson (Lentigo Maligna)

Early in its biologic history, this pigmented skin tumor resembles a junctional nevus but is characterized by continuing slow growth to form a patch of pigmentation of varying size. Characteristically, it occurs on the face, especially in the malar region of elderly patients (18). The pathologic difference between lentigo maligna and malignant melanoma is indefinite, and a change from the benign to the malignant state may take up to 40 yr (19–21). Biopsy of all lentigo maligna lesions is mandatory. For dermatologic classification, lentigo maligna has also been referred to as circumscribed precancerous melanoma (22–24).

Dermatologists have advised electrodesiccation and curettage for some of these melanotic freckles, although a plastic surgeon would generally advise surgical excision and primary closure if possible or closure with a full thickness retroauricular skin graft in an elderly patient. With more extensive involvement, especially on the face, three-dimensional excision (including depth) with an adequate margin of normal skin is performed. If melanoma is evident, operative criteria are those for other melanomas of lower grade malignancy, Clinical Stage I, Level I (25). In these cases, excision and full thickness skin grafting are advisable.

BIOPSY AND THE PROGNOSIS OF MALIGNANT MELANOMA

The question of manipulating a melanoma or any malignant type of tumor for biopsy has always disturbed surgeons who feel local recurrence and distant metastases increase from such a procedure. There have been too many arguments

raised in the literature to mention concerning this dilemma, as well as the advantages and disadvantages of excisional biopsies, total biopsies, and aspiration biopsies. It has never been proven that cancer cells found in operative wound washings have been significant, and no definite link has ever been demonstrated between biopsy and local recurrence, regional metastases, distant metastases, or survival (26). For that matter, the finding of circulating tumor cells from many varieties of tumors (including melanoma) also has never been correlated with local recurrence, distant metastases, regional lymph node metastases, or survival (27).

Since the clinical diagnosis of pigmented cutaneous lesions is often uncertain, even with the expertise of a specialist, pathologic diagnosis is essential in order to plan appropriate surgical treatment. There is no evidence to indicate that even incomplete removal of a malignant melanoma at any histologic level followed by definitive surgery decreases the probability of survival (28).

SPECIFIC SURGICAL TREATMENT

Wide excision of the cutaneous malignant melanoma and/or biopsy site with coverage by a split thickness skin graft is the basic treatment procedure of choice. The treatment of Hutchinson's freckle and its differentiation from histologic Level I melanoma have already been noted. Sometimes the term superficial malignant melanoma is applied to those cases in which invasion is limited to the upper third of the dermis, Levels I and II (29). The procedure of choice for these cases is wide excision and skin grafting with sufficient depth. Frozen sections can be most helpful when the surgeon is working closely with a pathologist.

It is generally held that elective regional lymph node dissection in the treatment of Stage I and Stage II cutaneous melanoma is not advantageous. However, there has been a recent minority report that the inclusion of such an extended procedure improves 5-yr survival (30).

The more important aspect of treatment should be adequate local excision. Statistics have shown that the local recurrence rate of cutaneous melanoma following limited excision is approximately 57% in contrast to a 3% local recurrence following wide excision (31).

EXTENT OF RESECTION AND ROLE OF REGIONAL LYMPHADENECTOMY

The incidence of local recurrence is higher when wide excision is not performed. In those instances, about one-third of recurrences will appear in the scar, one-third will be in the tissue between the primary tumor and the lymph nodes, and one-third will appear as regional node metastases (32, 33). The general recommendations (34) in regard to local excision are listed below.

1. Malignant melanomas should be excised with a normal margin of tissue that extends about 6 cm beyond the edge of the lesion when anatomy permits. In some critical facial areas, the margins obviously cannot be so generous.

2. The area of excision should be asymmetrical when possible so that the extra "normal tissue" contains the draining lymphatics.

3. Excision should extend down to but not include the deep fascia, which is thought to be a barrier of lymphatic drainage from the subcutaneous tissue to a deeper lymphatic.

Alluded to before in this discussion has been the controversy surrounding the value of lymph node dissection. Therapeutic lymph node dissection means removal

of lymph nodes thought to be clinically involved. Prophylactic or elective lymph node dissection means removal of lymph nodes thought clinically uninvolved. Literally dozens of studies have explored this subject but without really valid conclusions, and so the inclusion of regional lymph node dissection electively or therapeutically after wide excision with skin grafting of the cutaneous melanoma remains one of the most controversial subjects in the field of surgery and plastic surgery (5, 30, 35–38). Some of the conclusions have been invalidated by the fact that over the period of review in most cases, improvement in results would be expected due to more adequate local excision. Also, to date there has been no controlled clinical investigation on randomly selected cases to determine the difference in actuarial rates of survival, local recurrence, regional metastases, and distant metastases by using different methods of treatment. For example, a recent paper (38) concluded that prophylactic groin dissection increased the survival rate of patients with malignant melanoma of the lower extremity. Survival rate decreased when done therapeutically as opposed to prophylactically. The extension of the radical groin dissection to include retroperitoneal and pelvic dissections produced no long-term survivors and increased morbidity. Of 87 patients studied, only 13% were alive at 5 yr, and half of those had ilioinguinal dissections. At 10 yr, only 9% of the patients were alive. Obviously, it is difficult to make a valid interpretation from this paper. This is especially true if one reads another publication that concludes that routine lymphadenectomy for malignant melanoma is justified neither electively nor therapeutically (37).

In order to assess the results of lymph node dissections, patients may be assigned a clinical stage as well as a histologic level. Clinical Stage I refers to localized melanomas, whether primary or recurrent. Stage II is used for those lesions that have spread to regional lymph nodes, and Stage III indicates distant metastases.

Another recent article (5) concerns head and neck melanoma. For Clinical Stage I disease at Level II, 6% of the lymph nodes were positive with an 86% 10-yr survival rate; Level III, 29% positive neck nodes and 60% 10-yr survival; Level IV, 32% positive cervical nodes with a 55% 10-yr survival; and Level V lesions demonstrated a 63% cervical lymph node metastatic rate with a 44% 10-yr survival. It was concluded that no neck dissections were required for Level I or Level II but that the patient with a Level V melanoma would benefit from a radical regional neck dissection. These conclusions were based on Clinical Stage I disease.

CONCLUSIONS

1. Wide local excision and skin grafting is the treatment of choice for malignant melanoma of the skin.

2. Regional lymph node dissection remains controversial, and perhaps immunologic treatment rather than therapeutic lymphadenectomy is indicated for regional nodal metastases.

3. Prophylactic regional lymphadenectomy is possibly indicated in the following three circumstances: (A) Where a factor of direct anatomic continuity and contiguity exists; (B) where the primary lesion recurs and the clinical status of the disease remains Stage I; (C) For Level V, Stage I lesions.

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