

An Overview of Skin Metastases

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Abstract

Cutaneous metastases are a poorly discussed subject. The skin is a rare area of tumor spread. Almost any type of cancer can disseminate through lymphomatous, hematogenous or contiguous way and display abnormalities to the skin. No similarities between their characteristics have been proven. There are useful tools in establishing the right diagnosis. Skin biopsy is the gold standard that can distinguish between benign and malignant tumors. Certain types of cancer seemed to have a predilection for some skin body parts. The treatment consists of treating the primary tumor whenever it is possible, but the prognosis is poor when metastases have occurred and the cancer might need only palliative care.

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1. Introduction

Metastasis (metastatic cancer) is the outbreak of malignant cells originating from a primary tumor, in another organ or tissue of the body. Cutaneous metastases are a poorly discussed subject taking into account the fact that the skin is not the most frequent area of tumor spread.

Almost any type of cancer can disseminate through lymphomatous, hematogenous or contiguous way and display abnormalities to the skin, but usually internal organs like lungs or liver are the first place where metastases occur.

There are no similarities between their characteristics, skin metastases varying from papulae, to nodules or ulcerations, and from pale skin-coloured lesions to dark red spots [1].

2. Clinical presentation

Cutaneous metastases usually appear near the primary tumor and the most frequent form they take is the firm, nonpainful, round-shaped, flesh coloured nodule [2].

The metastatic tumors might have different appearance from nodular lesions, inflammatory, to sclerodermoid, and histologic traits from adenocarcinoma, squamous cell carcinoma to undifferentiated lesions [1].

Sarcomas and sometimes carcinomas usually use the hematogenous spread as a metastatic pathway [2]; carcinomas are known for the initial lymphatic spread but usually it is very difficult to determine the specific pathway.

There are many changes on the surface of the skin which are benign but can easily be mistaken as malignant growths. For example, a dermatofibroma (benign fibrous histiocytoma) can have a differential diagnosis with melanocytic nevi, basal cell carcinoma, metastasizing dermatofibroma; solar lentigo (“old age” spots) [3] must be distinguished from lentigo maligna, lentigo maligna melanoma etc.

3. Diagnosis

Dermoscopy can be a useful tool in establishing the right diagnosis. Ultrasonography, MRI, CT scans can offer a wide view of the extent/spread of metastases when biopsy results are not conclusive [4]. PET CTs with fluorine 18-fluorodeoxyglucose (FDG) can monitor the recurrence of secondary determinations and the response at the conservatory treatment. In certain circumstances, fine-needle aspiration cytology can provide a diagnosis.

By prelevating skin biopsies or excision it is possible to differentiate between malignant secondary determinations and benign cutaneous manifestations [5].

The microscopic appearance (frozen sections) [2] and pattern might suggest the most likely primary cancer site, but sometimes the more advanced the cancer is the lesser the differentiation of the anaplastic metastases.

For example, a patient with tuberculosis (a mycobacterial infection) can present primary inoculation tuberculosis (red-brown papule or nodule), tuberculosis verrucosa cutis (brown-red indurated warty plaques), scrofuloderma (resulting from direct subcutaneous extension usually from lymph nodes), lymphatic and hematogenous spread of TB generating lupus vulgaris, or we can find metastatic hematogenous tuberculous abscesses called tuberculous gumma (in immunocompromised adults and children) [5]; there are many forms of the same disease and this is just one example which can make our diagnosis of cancer metastases unclear.

Therefore, skin biopsy is the gold standard that can confirm the diagnosis.

Benign skin lesions can be easily treated, if necessary, by: cryosurgery with liquid nitrogen, electrodesiccation, removal with fine scissors (when there is a pedunculated outgrowth of the skin) or cryotherapy, curettage, shave excision (when there are “stuck on”, well-circumscribed, scaly lesions) but if conservative management is chosen, a proper follow up can discover any exhibited unexpected changes in symptoms or appearance that can raise a question mark over the possible malignant transformation [3].

Although there are uncertainties about the incidence of cutaneous metastasis, a meta-analysis published by Richard A. Krathen in 2003 [6] emphasised a percentage of 5.3%. Only 1080 patients were found to have skin metastases of the total of 20 380 patients with malignancies. This study also pointed out that “approximately 5% of visceral malignancies eventually become metastases”.

Patients with melanomas, lymphoma or leukaemia were not included in this study; breast cancer (24%) had the highest incidence of secondary determinations and the most frequently affected area being the chest wall (thoracic wall being involved in 28.4% of the skin’s secondary determination), whereas the prostate cancer had the lowest one (of only 0.7%).

Certain types of cancer seemed to have a predilection for some skin body parts like: the renal cancer for the scalp, adenocarcinoma to lymphedema of the face, breast cancer to carcinoma erysipeloides.

When the microscopy cannot offer a proper diagnosis, immunohistochemical markers can differentiate the original site of the primary tumor: desmin for smooth muscle tumor, chromogranin for neuroendocrine cells, vimentin for mesenchymal cells, melanoma, sarcoma or lymphoma, etc.

Once the immunohistochemistry is available, the immunohistochemical evaluation should follow an algorithmic evaluation.

Another classification of the metastatic sites considering the primary cancer include: breast, kidney, lung – to scalp; oral squamous cell carcinoma, lung, renal – to the face; oral squamous cell carcinoma – to the neck; malignant melanoma, intestinal, renal and lung cancer – on the extremities etc.

Secondary determinations of breast cancer sometimes can mimic alopecia areata, but the local induration of the scalp can give a clue about the origin of the alopecia as being neoplastic [2].

Children's cancers do not usually disseminate in the skin, so metastases are pretty rare in this area, but if they appear are secondary to neuroblastoma, rhabdomyosarcoma or leukemia.

Usually the primary tumor is followed by the appearance of cutaneous metastases, and rarely skin determinations occur at the same moment or before the original cancer site is discovered [7].

The distribution follows sometimes the nearest region to the primary tumor, or has a certain predilection [8]: kidney cancer for the scalp and face, breast for the chest, lung for the back, colon for pelvis or near colostoma, etc.

A retrospective study which took place in Strasbourg, which involved 228 patients with cutaneous metastases, registered in hospital registers from the Laboratory of Cutaneous Histopathology during 46 years, dating back to 1950. Lymphoma and leukaemia with skin metastasis were excluded from the study. The study concluded that the median survival was 6.5 months in patients with a clear diagnosis of skin secondary determinations. 13% of the patients died after 1 month, 48% died after 6 months and 64.5% died after 1 year.

They also calculated the median survival taking into account the primary cancer site: 13.8 months for breast carcinoma, 13.5 months for melanoma and 2.9 months for lung carcinoma. Therefore, half of the patients with confirmed skin determination died in the first 6 months, the poorest prognosis being attributed to lung carcinoma [9].

4. Treatment

The treatment consists of treating the primary tumor whenever it is possible, but when metastases had occurred the cancer might need only palliative care, being untreatable. Simple excision does not have a curative effect or survival impact but might be a choice that sometimes improves the quality of life.

Palliative treatment includes debriding the crusted, scaly or bleeding lesions, keeping them dry and clean or using therapies like short-wavelength radiation to relieve pain, carbon dioxide laser therapy, liquid nitrogen therapy and electrochemotherapy, photodynamic treatment [2]. If the lesions have a large number of vessels, pulse dye laser therapy might be useful.

Numerous studies have suggested that the most frequent primary cancer in men was lung cancer (24%), followed by carcinoma of the large intestine (19%), melanoma (13%) and squamous cell carcinoma of the oral cavity (12%) while the most common primary tumors in women were carcinoma of the breast (69%), carcinoma of the large intestine (9%), melanoma (5%), and carcinoma of the ovary (4%) [10].

5. Prognosis

The prognosis is poor [11] taking into account the fact that, at the moment when the primary tumor is discovered, the metastatic dissemination is wide, and considering the TNM classification metastases include the cancer in his final stage (T4). In most of the cases palliative treatment is the ultimate solution for a disease that does not follow any pattern or rule.

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