Original Article:

Skin Clues to Hidden Cancers: Recognizing Cutaneous Manifestations of Internal Malignancies

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Abstract

Introduction: Cutaneous metastases, though relatively uncommon, are significant clinical markers that can indicate the presence of underlying malignancies. Recognizing cutaneous lesions as signs of internal malignancies is crucial, as timely intervention can enhance survival rates. This study aimed to investigate the cutaneous manifestations of internal malignancies.

Methods: This descriptive longitudinal study was conducted in the Dermatology Outpatient Department and Oncology Department of Bangladesh Medical College Hospital (BMCH), from July 2023 to December 2023. A total of 30 patients were selected as study subjects by purposive sampling technique as per inclusion and exclusion criteria. Collected data were entered, checked and analyzed with the aid of computer software SPSS version-19. **Result:** The study found that cutaneous metastases were most common in patients aged 51-60 years, with a male predominance (60%). Skin involvement was the most frequent (46.7%), followed by nails (26.7%) and hair (16.7%). The scalp was the most common site for skin lesions (26.7%), and ulceration was the most prevalent lesion type (33.3%). There was a significant reduction in symptoms such as itching, burning pain, and wetness between the first and second visits, suggesting positive treatment outcomes. The most common malignancies linked to cutaneous metastases were breast cancer (30%), colon cancer (20%), and lung cancer (23.3%). These findings highlight the importance of recognizing skin changes as early indicators of underlying malignancies, which is particularly valuable in resource-limited settings for early detection and treatment. **Conclusion:** The study underscores the critical role of cutaneous manifestations in the early detection of internal malignancies, particularly in regions with limited healthcare resources. Skin signs can provide an important opportunity for early diagnosis before more advanced diagnostic tools are accessible. The findings highlight the potential for these dermatologic clues to prompt timely interventions and referrals, thereby improving prognosis and treatment outcomes, particularly in underserved populations.

Keywords: Cutaneous Lesion, Internal Malignancy, Ulceration, Itching.

Introduction

The skin is a complex organ system endowed with its own distinctive physical, biochemical, and physiological properties. It interacts with other systems of the body in various disorders. The skin can often be a signpost directing the physician to the organ involved and sometimes to the specific disease process present. Sometimes this disease process is a malignancy. A complete skin assessment should be part of every physical examination because it may provide useful information regarding the patient's overall health. The skin examination can reveal signs of a predisposition toward malignancy and yield valuable early clues suggesting an underlying neoplastic process.[1] Internal malignancies are accompanied by various skin changes which may be specific infiltrates or non-specific changes. Specific infiltrates that show characteristic malignant cells on histopathological examination. This may occur either by direct extension or by tumour metastasis. Indirect

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involvement of the skin by visceral tumours can cause a variety of characteristic inflammatory, proliferative metabolic, and neoplastic changes and changes due to chemotherapy without the actual presence of tumour cells.[2] Cutaneous metastases are relatively uncommon, but they are important to recognize because cutaneous metastases indicate a sign of recurrence and widespread metastases have a poor prognosis and the survival period is reduced. The mortality rate is usually high with cutaneous metastases though early recognition offers some chance of survival, especially in those that present with cutaneous metastases. Cutaneous metastasis may precursor the recurrence of malignancy after treatment. Cutaneous metastasis can arise at any age but most cutaneous metastases occur during or after the fifth decade.[3] The most common tumor to metastasize to the skin is breast cancer and the most common site is the chest. Other skin manifestations due to chemotherapy, radiotherapy, or hormone therapy are also occurring.[4] Cutaneous metastases are relatively rare, yet they play a significant role in indicating the presence of internal malignancies, often signifying recurrence and widespread disease, which typically correlates with poor prognosis. The recognition of skin changes associated with internal cancer is critical for timely intervention, as skin lesions can be easily biopsied for histopathological examination. While the skin is the 18th most common site for metastasis, it provides accessible tissue that may yield important diagnostic information. In Bangladesh, cancer remains a significant health issue, with an estimated incidence of approximately 167,256 new cases annually. The leading types of cancer include oesophageal, oral cavity, lung, and breast cancers, which are prevalent across the population, particularly affecting individuals over the fifth decade of life. Understanding the epidemiology of cancer in this region highlights the need for heightened awareness and early detection strategies, especially concerning cutaneous manifestations of internal malignancies.[5] This study aimed to investigate the cutaneous manifestations of internal malignancies.

Methods:

This descriptive longitudinal study was conducted in the Dermatology Outpatient Department and Oncology Department of Bangladesh Medical College Hospital (BMCH), from July 2013 to December 2013. All patients attending the Dermatology outpatient department and Oncology department of BMCH were considered as the study population. A total of 30 patients were selected as study subjects by purposive sampling technique. A detailed history from a face-to-face interview with the patient, clinical examination, record review, and results of investigations were evaluated. An informed consent was taken from the patient. All the relevant information from the history, clinical examination, and investigation results were recorded in a predefined questionnaire or data collection sheet. Collected data were entered, checked, and analyzed with the aid of computer software SPSS version-19. Descriptive and analytic statistics were applied where needed. Ethical clearance was taken from the Hospital's ethical committee.

Inclusion criteria: a. Patients with clinically suspected skin manifestations of cancer patients and b. Patients with skin metastases in the internal malignancy confirmed by histopathology. Exclusion criteria: a. Patients below 18 years of age, b. Non-cooperative patient and c. The patient dropped out/expired before investigations were completed.

Result

Table I: Distribution of the respondents' according tosocio-demographic characteristics (n=55)

Age (years)	n	%
< 40	04	13.3
41-50	08	26.7
51-60	12	40.0
> 60	06	20.0
Mean ±SD	51.66 (±7.68)	
Sex		
Male	18	60.0
Female	12	40.0

It was observed that the mean age was 51.7 (±7.7) years, maximum age group was 51-60 years which was 12(40%). The majority 60% were male and 40% were female. Male female ratio 1.5:1. (Table I)

Table II: Affected areas of the disease (N=30)

Affected area	n	%
Skin	14	46.7
Mucous membrane	03	10.0
Nail	08	26.7
Hair	05	16.7

Regarding affected areas, skin involvement was most prevalent, affecting 46.7% of cases. Nails were the second most affected area, observed in 26.7%, followed by hair in 16.7%. Mucous membranes were less frequently affected, involved in only 10.00% of cases. (Table II)

Table III: Areas of onset of the skin lesion (N=30)

Onset	n	%
Scalp	08	26.7
Face	02	6.7
Neck	06	20.0
Upper extremity	02	6.7
Lower extremity	02	6.7
Chest	04	13.3
Abdomen	04	13.3
Back	02	6.7
Perineum	03	09.6

The scalp was the most common site, seen in 26.7% of cases, followed by the neck (20.0%). Chest and abdomen were each affected in 13.3% of cases. Less common areas included the perineum (9.6%), and face, upper and lower extremities, and back (each 6.7%). (Table III)

Table IV: Details spread of the skin lesion (N=30)

Details of spread	n	%
Ulceration	10	33.3
Scale	08	26.7
Papule	04	13.3
Rash	02	06.7
Maculae	04	13.3
Nodule	02	06.7

Ulceration was the most frequent, occurring in 33.3% of cases, followed by scaling in 26.7%, indicative of surface changes often linked to aggressive pathology. Smaller, raised papules were observed in 13.3% of cases, while maculae, flat discolored spots, were also noted in 13.3%, both of which can signal an underlying disease. Less common were nodules and rashes, each in 6.7% of cases. (Table IV)

Table V: Comparison of the skin lesion between the first visit and second visit (N=30)

Skin lesion	First Visit (N=30)	2nd Visit (N=30)	p-value
Itching			
• Yes	14(46.7)	08(26.7)	0.001
• No	16(53.3)	22(73.3)	
Burning pain			
• Present	22(73.3)	08(26.7)	0.04
• Absent	08(26.7)	22(73.3)	
Wet			
• Present	10(33.3)	06(20.0)	<0.001
• Absent	20(66.7)	24(80.0)	
Dry			
• Present	20(66.7)	10(33.3)	0.01
• Absent	10(33.3)	20(66.7)	
Blisters			
• Present	06(20)	06(20)	1.0
• Absent	24(80)	24(80)	
Growth bleeding			
• Present	08(26.7)	02(6.7)	0.06
• Absent	22(73.3)	28(93.3)	

Itching decreased from 46.7% to 26.7% of cases ($p = 0.001$), and burning pain reduced markedly from 73.3% to 26.7% ($p = 0.04$). Wetness also showed a significant decline from 33.3% to 20.0% ($p < 0.001$), while dryness dropped from 66.7% to 33.3% ($p = 0.01$). Blisters remained unchanged, present in 20% of cases at both visits ($p = 1.0$). Growth bleeding decreased from 26.7% to 6.7%, though not statistically significant ($p = 0.06$). Overall, symptom severity appears to lessen by the second visit. (Table V)

Table VI: Clinical type of cancer of the study population (N=30)

Type of cancer	n	%
Ca colon	06	20.00
Ca breast	09	30.00
Ca lung	07	23.33
Lymphoma cutis	03	10.00
Carcinoma of the cervix	02	6.67
Carcinoma of the ovary	03	10.00

The commonest malignancy encountered in Ca colon 06(20%), Ca breast 09(30%), Ca lung 07 (23.33%), Lymphoma cutis 03 (10.0%), Carcinoma of the cervix 02 (6.7%) and Carcinoma of the ovary were 03(10%). (Table VI)

Discussion

An association between systemic malignancy and cutaneous manifestations has long been recognized. The cutaneous features that can occur are numerous and heterogeneous, and many different etiologic mechanisms are represented6 These skin metastases reveal the presence of disseminated malignant disease and can lead to the diagnosis of unsuspected internal tumours or the spread or recurrence of an already diagnosed tumour.[7] In this study, the mean age of patients with cutaneous metastases was 51.66 (±7.68) years, with a notable concentration in the 51-60-year age group, which accounted for 40% of cases. The study found a male predominance, with a male-to-female ratio of 1.5:1, mirroring findings by Rajagopal et al., who reported a similar male predominance among their cohort of 300 patients, where 52% were male and 48% were female.[8] In the study of Ayyamperumal et al. 65% were males and 35% were females, the most common age group affected was in the fifth and sixth decades of life.[9] The onset of skin lesions varied, with the scalp being the most commonly affected area (26.7%), followed by the chest, abdomen, and back. These results align with a previous study that detailed a slightly different distribution of skin lesion onset but confirmed the scalp and trunk as prevalent sites for metastases.[10] Another study by Krathen et al. has similarly noted variations in the distribution of metastases across different body regions, emphasizing the skin's role as a metastatic site, albeit infrequently.[11]

Skin manifestations can serve as initial signs of internal malignancies.For example, paraneoplastic pemphigus and pruritus have been noted in association with various cancers, including hepatocellular carcinoma and lymphoma. The study also reported generalized pruritus in several patients with different types of internal malignancies, supporting previous findings by Rajagopal et al. that found pruritus is a common symptom in patients with underlying malignancies.8 Specific presentations such as flushing associated with pheochromocytoma and purpura in patients with acute myeloid leukaemia were also noted, emphasizing the varied dermatological manifestations that can accompany systemic diseases.Regarding the characteristics of the skin lesions, ulceration (33.3%) was the most common type, followed by scaling and papules. This distribution aligns with previous studies that have highlighted the diversity of skin manifestations in cutaneous metastases. The current study demonstrated significant improvement in symptoms such as itching, burning pain, and lesion characteristics between the first and second visits, suggesting a positive response to treatment. In terms of malignancies associated with cutaneous metastases, the study found colon cancer (20%) and breast cancer (30%) to be the most prevalent types. The findings align with Rajagopal et al., who noted a similar trend, particularly in males, where lung and colon cancers were prevalent, while breast and cervical cancers were more commonly seen in females.8 The overall prevalence of melanomas as a significant source of cutaneous metastases was also highlighted, confirming existing literature that positions them as one of the leading malignancies linked to skin metastasis.Moreover, Kilaru KR et al showed in their study that,cutaneous paraneoplastic syndromes serve as crucial clinical indicators that can appear before, alongside, or after the diagnosis of a specific cancer. Identifying these syndromes is essential, as it can enhance the likelihood of successful treatment and improve the patient's overall prognosis.[12] In low-resource settings, the ability to recognize cutaneous manifestations of internal malignancies holds particular importance, as it allows for the early identification of potentially life-threatening conditions without relying on costly imaging or laboratory diagnostics. Skin signs like acanthosis nigricans, erythema gyratum repens, and paraneoplastic pemphigus can serve as critical, low-cost screening tools. Recognizing these dermatologic clues can prompt further evaluation and referrals, even when more advanced cancer detection resources are limited.[13,14]

Limitations of the study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

Cutaneous metastases are important indicators of cancer recurrence and widespread disease, often linked to poor prognosis and reduced survival rates. Although the skin is the 18th most common site for metastasis, its lesions are easily accessible for biopsy and histopathological examination. Recognizing these metastases early can help prolong patient survival, as they may appear before internal visceral metastases. Skin lesions can occur in various locations, including the scalp, face, and extremities, presenting as ulcerations, scales, papules, rashes, maculae, or nodules.

Improvements in symptoms like itching and burning pain were noted between the first and second patient visits.

Recommendation

Depending on the study findings following recommendations were made -

- There is a need to increase awareness in the general public regarding the impact of skin healthcare needs for timely treatment.
- Major concern is to be given to increase awareness in the general population regarding cancer signs and how to prevent it.
- Access to healthcare is to be improved and must be provided at the primary and community level.
- Conducting research across multiple hospitals, particularly in diverse geographical or socio-economic areas, could increase sample size and offer a more representative view of the population. This approach would also help capture regional variations in disease presentation and provide insights into how local factors influence outcomes.
- Future studies could use a cross-sectional approach with data from community-based health screenings or general outpatient visits.

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Conflict of interest

None declared

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