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Original Article

Understanding the Malignancy Potential of Cutaneous/Subcutaneous Lesions: Insight from 9,202 Day-Surgery Procedures

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Abstract

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Objectives: Cutaneous and subcutaneous lesions often go unnoticed or disregarded, yet they can harbor malignant potential. These seemingly innocuous bumps and lumps vary in size and nature, necessitating thorough evaluation by health care professionals. In this study encompassing 9,202 day-surgery procedures, we sought to elucidate the malignancy risk associated with cutaneous/subcutaneous lesions.

Materials and Methods: Conducted as a descriptive case-control investigation, our study enrolled patients undergoing excision for such lesions from 2009 to 2018. Patients were stratified into study (malignancy confirmed by histopathology) and control groups. Comprehensive data collection included demographic profiles, pathology reports, surgical details, and follow-up outcomes.

Results: Analysis of 9,202 excision procedures involving 8,962 patients revealed epidermal/tricholemmal cyst as the most prevalent lesion type (34.5%), followed by lipomas (21.8%). Malignancies were identified in 1.1% of cases, predominantly affecting older individuals (mean age: 60.3 ± 16.2 years). While malignancy incidence correlated with advancing age, no significant gender disparity was observed ($p < 0.001$ and $p = 0.353$, respectively).

Conclusion: Our findings underscore the imperative of vigilance toward cutaneous and subcutaneous lesions, as they may harbor malignancy. Timely assessment by health care providers is paramount to promptly identify and manage potentially malignant lesions. With malignancy detected in over 1% of cases, our study emphasizes the necessity for meticulous evaluation and appropriate intervention strategies to mitigate associated risks effectively.

Keywords

- cutaneous lesion
- subcutaneous lesion
- excisional biopsy
- minor surgery
- malignancy potential

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Introduction

Cutaneous and subcutaneous lesions are common and can be benign or malignant. Benign lesions do not carry any significant harm, but malignant lesions are serious and can lead to life-threatening diseases such as cancer. Therefore, understanding the malignancy potential of cutaneous and subcutaneous lesions is important to help diagnose and treat these lesions effectively. [1,2]Cutaneous and subcutaneous tumors may originate from epithelial, mesenchymal, or melanocytic tissues, and the potential for malignancy varies for each type. For instance, malignant melanomas are more common in melanocytic lesions, while other skin cancers like basal cell or squamous cell carcinoma commonly originate from epithelial tissues. Therefore, a proper diagnosis is significant to determine the origin of the lesion, and the risk of malignancy.[3]

Malignancy Potential of Cutaneous and Subcutaneous Lesions

As a health care professional, it is crucial to understand that not all cutaneous and subcutaneous lesions are cancerous, but some can become malignant over time. This includes melanoma, which can arise from moles or other pigmented spots on the skin. Other types of skin cancer like basal cell carcinoma and squamous cell carcinoma can also originate from skin lesions. Consequently, early detection through regular medical evaluation is crucial to prevent these conditions from becoming life-threatening. Any new or altering skin lesion should be assessed by a medical professional to determine if it may pose a potential risk of developing into cancerous growths.[1,3] It is important for health care practitioners to educate patients on the importance of preventative care measures, including routine screenings to detect such lesions at their earliest stage when treatment has better outcomes, leading to successful treatment and improved quality of life.

Several factors can influence the malignancy potential of a cutaneous or subcutaneous lesion. One of the major determinants of malignancy is the location of the lesion, as this may affect its behavior and spread. For instance, lesions on the palm of the hands, soles of the feet, and genital areas are more prone to malignant transformation than lesions in other parts of the body.[3] Another essential factor in determining the malignancy potential of a cutaneous or subcutaneous lesion is the pattern of growth or change in the lesion over time. Regular checkups and monitoring of the lesion are crucial to identify any changes such as irregular borders, variability in color, or rapid growth that might indicate malignancy. Histology is also important in understanding the malignancy potential of cutaneous and subcutaneous lesions. A biopsy of the lesion can provide a detailed understanding of the lesion's cellular makeup, which can indicate the likelihood of malignancy.[4–6]

The aim of this study is to investigate the potential malignancy of cutaneous and subcutaneous lesions. Specifically, we will examine the histopathological features of these lesions to determine their likelihood of developing into cancerous growths. By understanding the malignancy potential of these lesions, we hope to improve early detection and treatment of skin cancer, ultimately leading to better patient outcomes. This study will contribute to the growing body of knowledge on skin cancer and provide valuable insights for clinicians and researchers alike.

Materials and Methods

This study was conducted in accordance with the principles outlined in the current Helsinki Declaration. The primary objective was to investigate the incidence and correlation of malignancy among patients who underwent excision for cutaneous and subcutaneous lesions over a 10-year period. The study cohort consisted of individuals who presented with such lesions and underwent excision. Comprehensive demographic data, pathology, and surgical reports, as well as follow-up information, were meticulously recorded for all participants. Patients diagnosed with malignancy based on histopathological examination comprised the study group, while those without malignancy formed the control group.

Through meticulous analysis and robust statistical methodologies, the study aimed to identify any significant disparities in characteristics and outcomes between the study group and the control group. Key factors such as age, gender, lesion size, location, and histopathological features were systematically compared between the two groups to identify potential risk factors for malignancy. Furthermore, long-term follow-up data were scrutinized to evaluate recurrence rates and overall survival among patients in both groups. The findings of this investigation hold promise in providing valuable insights into the management and prognosis of individuals undergoing excision for cutaneous and subcutaneous lesions, thereby informing clinical decision-making and improving patient outcomes.

Statistical Analysis

Statistical analysis of numerical variables was conducted using SPSS (Statistical Package for the Social Sciences) version 23 software (IBM Corporation, Armonk, New York, United States). Categorical variables were expressed as frequency and percentage, while normally distributed parametric data were presented as mean (standard deviation), and non-normally distributed parametric data were presented as median (quartile range) with the range of values. Parametric data comparisons were performed using the student's *t*-test, while categorical data comparisons utilized Fisher's exact test. Statistical significance was determined by a *p*-value less than 0.05 at a 95% confidence interval.

Results

In our study, a total of 9,202 excision procedures were performed on 8,962 patients over the specified duration. The most prevalent lesions encountered were epidermal/tricholemmal cysts and lipomas, constituting 34.5 and 21.8% of cases, respectively. Among the total cohort, malignancy was identified in 104 patients, representing a prevalence of

1.1%. ►Table 1 presents a comprehensive breakdown of the various diagnoses observed among the cases examined.

The average age of patients with malignancy was 60.3 (± 16.2) years, with 60 being males and 44 females. Interestingly, patients diagnosed with malignancy were significantly older than those without malignancy (59.9 ± 14.7 vs. 44.3 ± 14.4 years, respectively, $p < 0.001$). However, no statistically significant difference was observed in terms of gender distribution ($p = 0.353$). The most prevalent histological types identified among patients with malignancy included carcinoma, sarcoma, lymphoma, and malignant melanoma. Additionally, 10 patients necessitated supplementary surgical intervention following the pathology results. Those diagnosed with malignancy were subsequently referred to the oncology department for further follow-up and additional treatments.

Discussion

Cutaneous and subcutaneous lesions encompass a spectrum of abnormal growths or changes in the skin and underlying tissue, manifesting in diverse forms such as lumps, bumps, or patches. [1] These lesions arise from various etiologies, including genetic predispositions, environmental factors, and lifestyle influences. [2] Diagnostic imaging modalities like ultrasound play a crucial role in evaluating superficial lesions, particularly those not amenable to assessment via computed tomography. [4]

Diverse Etiologies and Treatment Approaches

These lesions can arise from both benign and malignant origins, with common benign growths including skin tags and lipomas, alongside potentially malignant entities like skin cancer.[1] Surgical interventions such as shave/curettage or excision and closure represent primary treatment modalities for these lesions.[5,6] However, neglecting timely intervention may engender risks and complications, spanning delayed wound healing to metastatic cancer dissemination.[6–8] Hence, prompt medical evaluation and intervention are imperative for suspicious lesions.

Table 1 Overview of diagnoses among cases under consideration

Diagnoses	*n*	%
Benign	**9,098**	**98.9**
Lipoma	2,010	21.8
Trichilemmal cyst	1,619	17.6
Epidermal cyst	1,554	16.9
Polyp	964	10.5
Granulation (nonspecific)	758	8.2
Nevus	443	4.8
Keratosis	111	1.2
Pilomatrixoma	14	0.1
Verruca	3	0.03
Malign	**104**	**1.13**
Carcinoma	54	0.6
Sarcoma	36	0.4
Lymphoma	11	0.1
Melanoma	3	0.03

Emphasizing Early Detection and Intervention

The study underscores the critical imperative of early detection and intervention for cutaneous and subcutaneous lesions. While many lesions are benign, the potential for malignancy necessitates vigilant medical attention and proactive management. [7,8] Noteworthy symptoms indicative of concern include the emergence of new lesions, alterations in existing lesions, and associated pain or pruritus. [9] Imaging techniques like magnetic resonance imaging (MRI) and ultrasound aid in lesion assessment, often necessitating biopsy for definitive diagnosis.[4]

Navigating Treatment Options

Early detection facilitates an array of treatment options tailored to lesion characteristics, ranging from surgical excision to adjunctive therapies like radiation or chemotherapy. Careful consideration of lesion type, location, and patient factors guides treatment decisions, ensuring optimal outcomes while minimizing unnecessary interventions. Accessible outpatient surgical procedures under health care provisions like the Affordable Care Act enhance treatment accessibility and affordability for affected individuals.[9]

Empowering Patient Advocacy

It is paramount for individuals to advocate for their health by promptly addressing any concerning lesions and exploring available treatment avenues. Awareness of potential risks, coupled with proactive engagement with health care providers, enables timely intervention and fosters favorable prognoses.[10] By prioritizing early detection, informed decision-making, and collaborative care, individuals can effectively navigate the complexities of cutaneous and subcutaneous lesions, thereby safeguarding their health and well-being.

Insights from 9,202 Procedures: Understanding the Data

Through the evaluation of 9,202 procedures for cutaneous and subcutaneous lesions, this study sheds light on important trends in lesion characteristics and outcomes. The data reveal that while the majority of lesions were benign, a notable percentage (1%) demonstrated malignancy. Among the identified lesions, cysts emerged as the most common, followed by lipomas and basal cell carcinomas.

Emphasizing Early Detection and Treatment

The study's findings underscore the critical importance of early detection and prompt treatment of cutaneous and

subcutaneous lesions. Early intervention not only prevents the progression of benign lesions but also mitigates the risk of malignant transformation. [7] Utilizing advanced imaging modalities such as high-resolution ultrasound and MRI can aid in the accurate evaluation of soft-tissue lesions, facilitating timely diagnosis and intervention. [3,11] Moreover, employing specialized surgical techniques like Mohs surgery enables thorough removal of skin cancer, ensuring optimal outcomes by addressing lesions with precision. [12]

Enhancing Patient Outcomes

Recognizing and addressing cutaneous and subcutaneous lesions in their early stages are paramount for averting complications and optimizing patient outcomes. By emphasizing proactive screening, efficient diagnostic modalities, and tailored treatment approaches, health care providers can enhance patient care and mitigate the burden of both benign and malignant lesions. Ultimately, prioritizing early detection and intervention not only safeguards individual health but also contributes to overall health care efficacy and resource utilization.

Limitations

One limitation of this study is the potential lack of diversity in the cases examined, as the study population was restricted to patients with cutaneous and subcutaneous lesions who underwent excision. This limitation may impact the generalizability of the findings to broader patient populations. Additionally, the accuracy of histopathological examination in detecting malignancy could introduce variability, and there may be inherent selection bias in the control group. Further research is warranted to validate the findings of this study and explore potential confounding factors that may influence the results.

Overall, this study aimed to provide valuable insights into the incidence and relationship of malignancy in patients with cutaneous and subcutaneous lesions. By analyzing demographic characteristics, pathology and surgery reports, and follow-up data, we hope to contribute to the understanding of this important medical issue.

Conclusion

Our study underscores the importance of recognizing the malignancy potential of cutaneous and subcutaneous lesions. While the overall malignancy rate was low, it is imperative to remain vigilant and consider the possibility of malignancy, particularly in older patients. Early detection and appropriate management are paramount in improving patient outcomes. Therefore, health care providers should maintain a high index of suspicion and evaluate cutaneous and subcutaneous lesions with due diligence. Further research is necessary to develop more precise diagnostic and treatment strategies for these lesions, ultimately enhancing patient care and outcomes.

Authors' Contribution

F.B., A.A., İ.K. contributed to the concept and design of the study; data acquisition; statistical analysis; F.B., A.A., H.T., Y.K.Ç. interpreted the results; analyzed the data and drafted the manuscript. All authors critically revised the manuscript, approved the final version to be published, and agree to be accountable for all aspects of the work.

Ethical Considerations

The study was performed according to the Helsinki Declaration, and institutional review board approval was obtained. All the patients and/or their patients/guardian signed a general consent form allowing anonymous use of data for education, research, and quality improvement. The authors confirm that data were collected retrospectively and anonymously in the medical institution according to personal data privacy rules. This study does not contain identifying information of the patients.

Ethical Approval

This study was approved by the Ethics Committee of the University of Health Sciences, Umraniye Education and Research Hospital (Approval Number/Date: B.10.1.TKH.4.34.H.GP.0.01/245/2024).

Reporting Guidelines

STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines were used when reporting this observational study.

Conflict of Interest

None declared.

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