Risk Profiles in Pleomorphic Dermal Sarcoma of the Head and Neck: A Focus on Demographics and Comorbidities

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ABSTRACT

Pleomorphic dermal sarcoma (PDS) is a rare cutaneous malignancy predominantly affecting elderly males and typically occurring on sun-exposed areas such as the head and neck (Figure 1). [1-3] This study aims to evaluate the impact of demographic factors and comorbidities on the development and recurrence risk of PDS. A retrospective review of institutional records from 2016 to 2024 identified patients diagnosed with PDS. Data on demographics, comorbidities, tumor characteristics, treatment modalities, and outcomes were collected and analyzed. The cohort (mean age 78, M:F ratio 7:1) demonstrated a high prevalence of comorbidities. Metastasis occurred in 37.5% and local recurrence in 12.5%. Notably, a history of solid organ transplantation significantly increased the odds of recurrence or metastasis (OR = 24, 95% CI [1.02–580], p = 0.048). The overall mortality rate was 25%, with all deaths attributed to PDS-related complications or metastasis.

OBJECTIVES

- To determine the demographic profile of patients with PDS.
- To identify common comorbidities associated with PDS.
- To evaluate the recurrence risk and survival outcomes in patients with PDS.

METHODS

A retrospective review was conducted using institutional records from 2016–2024, identifying patients coded under ICD-10 C49.9 ("Malignant neoplasm of connective and soft tissue, unspecified") and patients of our 3 Head & Neck surgeons at our institution. Of 194 patients screened, 16 with confirmed PDS diagnoses were included. Data on demographics, comorbidities, tumor characteristics, treatments, and recurrence outcomes were collected and validated by two independent reviewers, H.D., N.W..

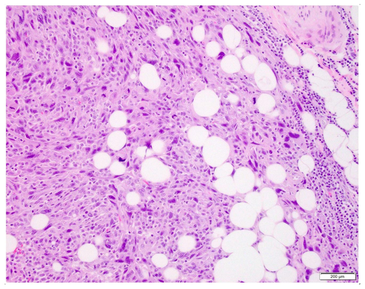

FIGURE 1
PDS is characterized by pleomorphic epithelioid cells, atypical spindle cells, and multinucleated tumor giant cells.

RESULTS

- The cohort (mean age 78, M:F ratio 7:1) demonstrated high prevalence of comorbidities, including history of other cancers (93.8%), hypertension (75%), obesity (37.5%), thrombotic disorders (31.3%), chronic kidney disease (31.3%), obstructive sleep apnea (25%), solid organ transplant history (25%), and anxiety (25%). (Figure 2)

RESULTS

- Tobacco and alcohol use were reported by 43.8% and 31.3%, respectively.
- Metastasis occurred in 37.5% and local recurrence in 12.5%. Notably, a history of solid organ transplantation significantly increased the odds of recurrence or metastasis (OR = 24, 95% CI [1.02–580], p = 0.048). (Figure 3)
- The overall mortality rate was 25%, with all deaths attributed to PDS-related complications or metastasis.

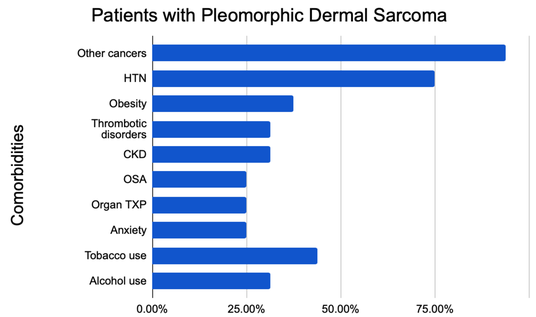

FIGURE 2
Rates of comorbidities in patients with PDS.

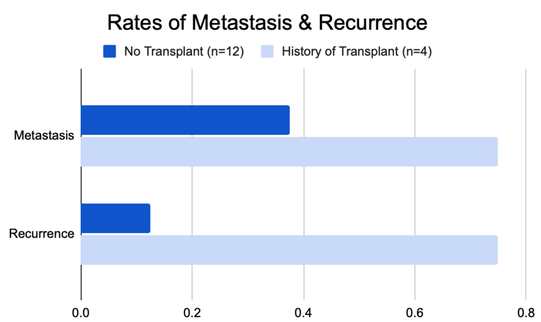

FIGURE 3
Risk of recurrence and metastasis in patents with organ transplant.

DISCUSSION

PDS predominantly affects elderly males, with a significant association with sun-exposed areas such as the scalp. Common comorbidities include cardiovascular diseases, diabetes, and immunosuppression, which may influence the recurrence risk. Immunosuppression and perineural invasion are significant predictors of recurrence, highlighting the need for close monitoring and aggressive management in these patients.[1-2]

CONCLUSIONS

PDS is a rare, aggressive cutaneous malignancy with a high recurrence rate. Demographic factors and comorbidities, particularly immunosuppression and perineural invasion, significantly impact recurrence risk. Management of high-risk populations are essential to improve outcomes and reduce recurrence rates.[1]

REFERENCES

1. Lonie S, Yau B, Henderson M, Gyorki D, Angel C, Webb A. Management of pleomorphic dermal sarcoma. *ANZ J Surg*. 2020;90(11):2322-2324.
2. Tillman BN, Liu JC. Cutaneous Sarcomas. Otolaryngol Clin North Am. 2021;54(2):369-378.
3. Saleh JS, Whittington CP, Bresler SC, Patel RM. Pleomorphic Dermal Sarcoma. Surg Pathol Clin. 2024;17(1):153-158.

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