

Cutaneous Involvement in Plasma Cell Myeloma: Report of a Case

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Abstract- Plasma cellmyeloma constitutes about 10% of all hematologic malignancies. Metastatic cutaneous lesions without underlying bony involvement are rare and associated with advanced disease, poor prognosis and high tumor burden. IgG is the most common subtype and IgD is believed to have a more aggressive course.

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Introduction

Plasma cellmyeloma constitutes about 10% of all hematologic malignancies (1,2). Cutaneous involvement due to infiltration of malignant plasma cells is uncommon (3) and may precede plasma cellmyeloma (primary) or occurs during the course of the disease and /or relapse (secondary) (1). Secondary skin involvement is mainly the result of direct extension from skeletal tumors (3,4). However, albeit being rare, metastatic cutaneous lesions without underlying bone involvement can occur (3) and are a reflection of high tumor burden (2). Herein, we report a 48-year-old case of plasma cellmyelomathat developed metastatic cutaneous lesions and briefly review the literature.

Case Report

A 48-year-old man presented with a four-week history of multiple painless erythematous nodular lesions on the right flank, right forearm and posterior aspect of the right knee. The lesions measured 30 mm on average. His history was notable for plasma cellmyeloma diagnosed 6 months earlier. Serum protein electrophoresis at the time of diagnosis revealed a suspicious lambda free light chain. IgM, IgG and IgA were negative. IgE and IgD had not been evaluated.

Just one month after diagnosis, while the patient was under chemotherapy, serum creatinine and BUN raised and a scheduled weekly hemodialysis started.

Histologic examination of the incisional biopsy of skin lesions of right forearm revealed diffuse plasma cell infiltration of the dermis extending to deep dermis. The

neoplastic cells were positive for CD138 and CD56. B-cell markers including CD 20 and CD 79a were negative. The neoplastic cells show IgD immunophenotype with lambda chain restriction.

Considering the fact that there was no bony destructive lesion in the area of cutaneous involvement, the diagnosis of secondary metastatic cutaneous plasmacytoma was established.

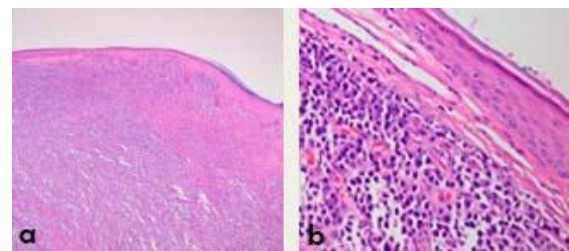


Figure 1. a-Diffuse infiltration of neoplastic cells in the dermis(H&E).
b- The neoplastic cells have the plasmacytoid appearance(H&E).

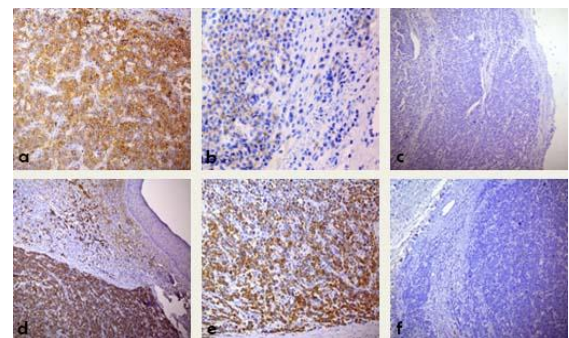


Figure 2. IHC staining shows positive CD138 (a); weak CD56 (b); Negative CD20 (c); positive IgD (d) and Lambda light chain (e); and negative Kappa light chain (f)

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Discussion

Plasma cellmyeloma is characterized by malignant proliferation of neoplastic plasmacells (5). Cutaneous involvement associated with plasma cellmyeloma is uncommon, occurs in 5-10% of cases (6) and are classified into specific and nonspecific variants (6,7).

While a variety nonspecific cutaneous lesions including amyloidosis, pyoderma gangrenosum, leukocytoclastic vasculitis, necrobiotic xanthogranuloma, pruriginous ichthyosiform dermatitis, alopecia (1,6,7) can be observed in plasma cell myeloma, the specific cutaneous involvement is the result of infiltration of plasma cells whether in the form of direct extension from underlying bone or by hematogenous spread (4,6).

Plasma cellmyeloma is the prototype of cancers in which the neoplastic cells interact with microenvironment (5).

Ecotaxis, the migration of circulating lymphoid cells into organs or tissues with appropriate microenvironment, is considered as a probable mechanism of certain extranodal lymphoid tumors. The same principle can be suggested for extramedullary myelomatous tumors (2).

Decreased expression of adhesion molecules especially VLA-4, CD44 and loss of CD56 are proposed as potential mechanisms (5,6).

Usmani *et al.*, (8), evaluated Extra Medullary Disease (EMD) in a large series of 1965 patients. The frequency of EMD at the time of relapse or disease progression was about 5% with liver as the most frequent site of involvement, whereas skin was the most frequent location of EMD at the time of diagnosis.

The skin involvement is usually presented as multiple papules or cutaneous or subcutaneous nodules measuring 1 to 5 cm, with firm consistency and erythematous-violaceous color. The more frequent sites are the trunk, extremities and face (3,6). Our presented case also showed multiple nodular lesions in his flank and upper extremity. In a literature review by Requena, *et al.*, (3) the most common sites were trunk and abdomen (65/100) followed by scalp, face and neck (27/100), lower extremity (23/100) and upper extremity (16/100).

In microscopic examination, we found diffuse infiltration of immature plasma cells in the dermis. The neoplastic cells were positive for CD138 and revealed IgD lambda chain restriction.

In a series of eight patients reported by Requena *et al.*, (3) strong immunoreactivity for CD138, and EMA

were reported while CD38 and CD43 revealed variable expression (CD43 weak positive in 2%). CD56 was negative in all cases except for one. The same was in a cutaneous plasmacytoma reported by Nguyen (2).

As mentioned before, the loss of CD56 is believed to contribute to myeloma dissemination (5). Positive reaction in the metastatic site in our case indicates the significance of other potential mechanisms of tumor spread.

A review of cases of plasma cell myeloma with skin involvement reveals that IgG is the most common subtype (1-4,6,7,9) constitutes about 56% of cases (4), followed by IgA (24%), free light chain (12%), IgD (4%) and IgM (4%) (4). In a report of a review of a series of cases (3), 9 out of 74 cases were IgD. Patients with IgD plasma cell myeloma and skin involvements are believed to have a more aggressive course (3,6). Jancelewicz *et al.*, (10) found that more than 50% of patients with IgD plasma cellmyeloma had the extramedullary disease at the time of presentation.

Some authors reported a greater predominance of IgA subtype in cutaneous plasmacytoma (4,6), whereas others note that metastatic cutaneous lesions more frequently express IgD immunoglobulin (4). There are also different series (3,11) that show the risk of extramedullary involvement is not associated with specific immunoglobulin class.

Regardless of immunoglobulin type of skin lesions, in most series (1-3,9), there is a correlation between serum immunoelectrophoresis and immunohistochemistry of infiltrating plasmacells. Unfortunately, IgD was not evaluated in serum. Immunofixation electrophoresis study of our patient and only lambda chain restriction was confirmed.

Cutaneous involvement generally occurs late in the course of the disease (3) and is associated with advanced disease, poor prognosis and high tumor burden with the death of most patients within several months after skin involvement (3,12). In autopsy extensive plasmacytic infiltration of organs is expected (6).

In view of the rare condition of the disease, treatment of cutaneous plasmacytoma is still controversial (2).

The patient discussed here developed skin lesions about six months after diagnosis of plasma cellmyeloma. We think, also uncommon, metastatic tumor spread should be considered in differential diagnoses of both clinical and pathological examination of cutaneous lesions in a patient with Plasma Cell Myeloma.

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