Service de Dermatologie et Vénéréologie

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Cutaneous T-cell lymphoma of mycosis fungoides type with CD30 positive transformation and Sweet-like neutrophilic dermatosis

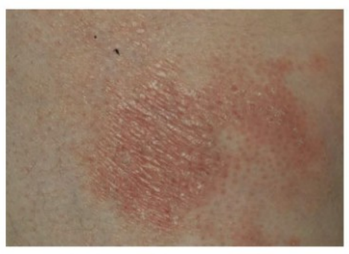
Florine André, Nikolaos Kaparos, Sophia Bogiatzi, Mathieu Leuenberger, Laurence De Leval, Daniel Hohl, Christa Prins, Michel Gillet, Emmanuella Guenova

University Institute of Pathology and Department of Dermatology, Lausanne University Hospital (CHUV) and Faculty of Biology and Medicine, University of Lausanne, Switzerland

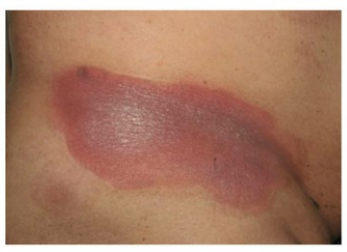
Introduction

Mycosis fungoides (MF)

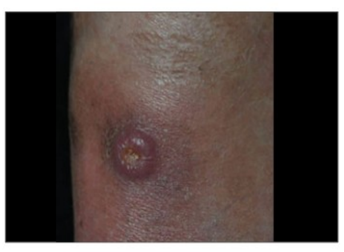
- MF is the main subtype of cutaneous T-cell lymphomas (CTCL), accounting for approximately 60% of CTCL.
- MF is most often indolent.
- Large cell transformation in MF is the histopathological transformation of neoplastic small lymphocytes to a large cell phenotype (CD30+), which may occur in 20–55% of advanced MF cases.
- Transformed disease is an histological marker of poor prognosis (5-years survival of less than 20%).
- The treatment is targeted to the skin for patch and plaque (dermocorticoids, chlormethine, phototherapy, radiotherapy) and systemic for tumoral lesion (alpha interferon, steroids, chemotherapy).



Mycosis fungoides - patch: erythematous, atrophic and slightly hyperkeratotic lesion



Mycosis fungoides - plaque: erythematous, violaceous lesion with mild hyperkeratosis



Mycosis fungoides - tumoral lesion: nodular lesion appearing over a previous patch-type lesion

Neutrophilic dermatoses (ND)

- ND are skin lesions for which histologic examination reveals intense epidermal, dermal, and/or hypodermal neutrophilic infiltrates with no evidence of infection or true vasculitis.
- Cutaneous findings in ND are variable (vesiculopustules, plaques, nodules or ulcerations).

The association of ND with various hematologic disorders is well documented but uncommon with CTCL.

Case report

An 80 year old woman known for MF, stage T3N0M0, diagnosed in 2017, with transformed CD30+ disease, associated with ND.

Presented with fever and skin condition deterioration, with painful, ulcerated skin nodules and fierce itching *(Figures 1 & 2)*.

Skin lesions are not responding to methotrexate and systemic corticosteroids.

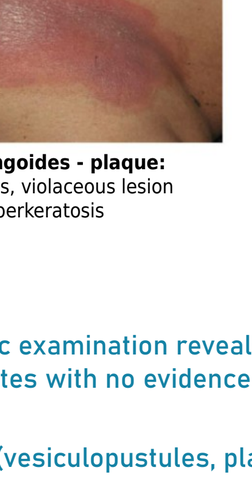


Figure 1 - Dec. 2020: erythematous, violaceous lesion

Figure 2 - one month later: ulcerated nodular lesion on the buttocks

Additional tests

PET-CT (03.2020):

- First disease progression (skin, lymph nodes, pulmonary)

Skin biopsy – right breast (06.2020):

- Dense, atypical lymphocytic dermal infiltrate, some cells medium in size with irregular nuclear borders and others larger showing oval nuclei and pale chromatin with numerous admixed lymphocytes.
- Dermal infiltrate of polynuclear neutrophils and eosinophils, without edema in the upper dermis *(Figure 3)*.
- CD30 shows large cells dispersed in the infiltrate, representing about 30% of T cells *(Figures 4 & 5)*.
- Epidermis is parakeratosic and infiltrated by atypical cells, neutrophils and eosinophils, which form a few sub-corneal pustules.

Laboratory parameters (12.2020)

- Lymphocytosis: 16.9 G/l
- Neutrophilia:14.37 G/L (85%)
- Immature granulocytes: 0.64 G/L (3.8%)
- Anemia: 101 g/L
- Thrombocytosis: 425 G/L
- Hyperlactatemia: 423 U/l

Figure 3 - Patient's skin biopsy: the dermal infiltrate consists of numerous atypical lymphocytes, as well as polynuclear neutrophils, eosinophils, and admixed lymphocytes, without edema in the upper dermis.

Diagnosis

Transformed CD30+ MF with concomitant Sweet-like ND not responding to systemic corticosteroids and methotrexate

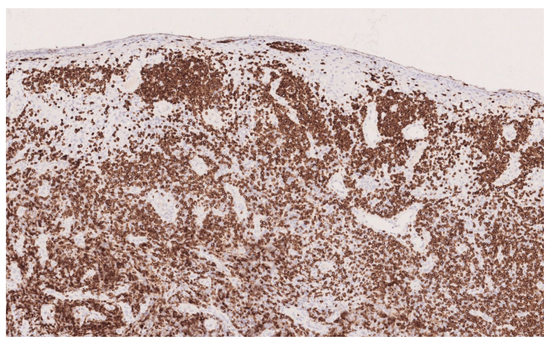


Figure 4 - CD3 immunohistochemistry: malignant cells are of T cells origin.

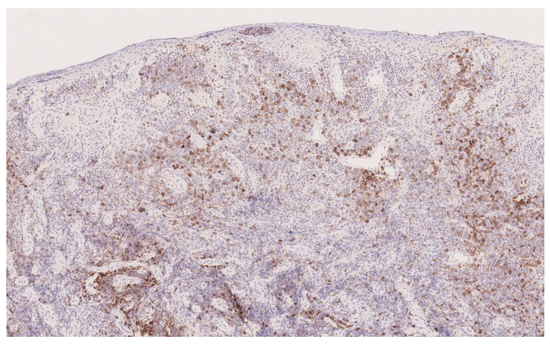


Figure 5 - CD30 immunohistochemistry: histological MF transformation with partial expression of CD30 (approx. 30%).

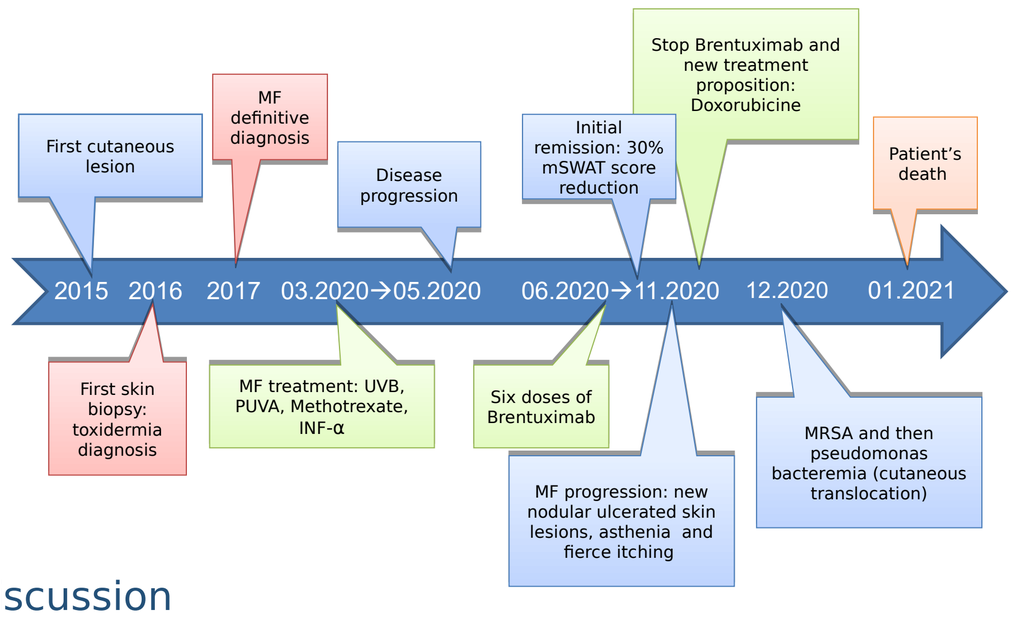
Outcome

Immunotherapy (Brentuximab) introduction with an initial remission (reduction of mSWAT (Modified Severity-Weighted Assessment Tool) down to 30% from June 2020 to November 2020).

After 6 cycles of Brentuximab, MF fulminant progression and deteriorated general condition.

Superinfection and sepsis (MRSA methicillin resistant Staphylococcus aureus and later Pseudomonas aeruginosa) by skin translocation.

Palliative radiotherapy and patient death.



Discussion

- There was a long MF diagnostic delay (almost two years) because of nonspecific clinical and histological findings at disease onset.
- ND may be associated with various systemic disease including inflammatory bowel disease or lymphoproliferative disease, especially acute leukemias. However, there are only seven reported cases of MF associated-ND in the literature and only two of them include transformed disease.
- The type of ND described in these cases are diverse (pyoderma gangrenosum-like, neutrophilic hidradenitis, Sweet's syndrome and exanthematous pustulosis).
- In our case, Sweet-like ND is an association of clinical symptoms (fever, painful skin nodules) and laboratory parameters (lymphocytosis and neutrophilia) compatible with Sweet syndrome but without edema in the upper dermis, which is a histological hallmark of Sweet syndrome. Edema was never present in patient's skin biopsies.
- In almost all cases, MF associated with ND has a fulminant progression and resistance to usual treatments (systemic corticosteroids, methotrexate and then immunotherapy in our case). Quality of life is deeply reduced with considerable morbidity from pain, itching and disfigurement.
- The pathological mechanism of neutrophils activation is unknown.

Conclusion

We report an interesting case of an 80 year old woman diagnosed in 2017 with transformed CD30+ MF associated with ND. She presented fulminant MF disease progression with painful skin nodules and fierce itching, despite Brentuximab introduction. She died of sepsis as a disease complication.

The association of MF with ND is rare, underreported and seems to be related to poorer prognosis, resistance to treatment and impaired quality of life.

ND associated with MF could be a paraneoplasic process and its early recognition might improve patient outcome.

Acknowledgements and references

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