DNA Content of Mycosis Fungoides Cells

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Summary. DNA content of mycosis infiltrate cells was measured in 5 patients with the Feulgen cytophotometric method in the plaque and tumor stages. In addition, the infiltrate cells were differentiated cytochemically into histiocytes and atypical lymphoid cells with NaF-sensitive naphthol-AS-D-acetate esterase. In no case was an aneuploid stem line demonstrated. However, increasing duration of the tumor stage was associated with a larger proportion of tetraploid and octoploid cells. The DNA histograms also exhibited a local proliferation of atypical lymphoid cells. This proliferation was arrested by cytostatic therapy. Comparison with semi-thin-sections of tumor tissue showed that the mycosis fungoides cells are atypical lymphoid cells. These DNA measurements do not contradict the concept of limited aneuploidy, as reported in cytogenetic studies. Thus mycosis fungoides fits in with the DNA distribution pattern in the group of lymphomas.


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Mycosis fungoides is currently regarded as one of the malignant lymphomas (Bluefarb, 1959; Epstein et al., 1972), whose first manifestation in the skin is especially remarkable. On the basis of morphological, immunological, and functional studies, Lukes and Collins (1975) and Lennert (1975) classify mycosis fungoides as a non-Hodgkin's lymphoma with a low grade of malignancy, subclassification T-cell lymphoma or lymphocytic lymphoma (T-cell). In paraffin sections, the polymorphous cellular infiltrate shows a predominance of cells with no further morphological definition. These atypical lymphoid cells are lymphocytes with T-cell properties, according to Edelson et al. (1974). Ultrastructurally, mycosis cells are characterized by a large, cerebriform nucleus with an irregular distribution of heterochromatin and often multiple, large nucleoli and little cytoplasm containing only isolated cellular organelles (Brownlee and Murad, 1970; Fisher et al., 1972).

Tumors with histologic and biologic criteria of malignancy usually exhibit an aneuploid DNA content (Böhm and Sandritter, 1975). The determination of DNA content may contribute toward deciding whether the mycosis cell is a tumor cell. This could make possible new insights into the pathogenesis of mycosis fungoides.

**Patients**

Studies were carried out on 5 patients with clinically and histologically confirmed mycosis fungoides.

**Case 1**: (S. H., age 43).
Relapsing, erythematous, partially infiltrating skin findings from 1972–1974. Numerous mycosis tumors since 1975. Biopsies taken prior to, during, and after cytostatic therapy (short infusions of cyclophosphamide (1 g), vincristine (1 mg/m²) and 6 days prednisone (40 mg/m²)).

**Case 2**: (F. M., age 75).

**Case 3**: (R. G., age 54).

**Case 4**: (B. H., age 61).

**Case 5**: (S. E., age 77).
Relapsing, eczematous skin changes since 1959. Infiltrative skin areas since 1975. No systemic therapy.
A variety of topical treatments had been carried out in all cases. Theses treatments were omitted 3 weeks prior to biopsy (August, 1975).

**Methods**

Tissue cylinders removed with a rotating skin punch (4–6 mm in diameter) were imprinted onto glass slides and the cell samples were fixed immediately in methanol-glacial acetic acid-formalin (85:5:10 v/v). Clinically unchanged skin (Case 1), premycotic (Case 1), infiltrative (Cases 1, 2, 5) and tumorous (Cases 1, 3, 4) areas were punched out. The tissue cylinders were fixed in phosphate...