

## SPECIAL ARTICLES

### Clinical Cytodiagnosis as an aid to Dermatology

By

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At an international symposium<sup>1</sup> held in Erlangen in 1957, clinical cytodiagnosis was defined as the microscopic examination of individual cells, groups of cells or tissue fragments which have either separated spontaneously or have been removed from the tissues by artificial means.

Haematology plays an important role in modern cytodiagnosis, since the latter is based on the methods of blood and bone marrow examination.

**Method :** Clinical cytodiagnosis is a method of biopsy for the examination of cell smears mixed with tissue fluids. The specimen is aspirated from the tissues using a special puncture technique. Smears may also be prepared by taking the unfixed tissue fragments obtained by standard biopsy and spreading them out on microscope slides<sup>2</sup>. The puncture method has the advantage that, in cases where there are multiple changes, specimens can readily be obtained from different locations and smears prepared for the detailed examination of intact and isolated cells. Cytodiagnosis is thus complementary to the traditional excision method of biopsy for the examination of sections, and wherever possible the two methods should be used in combination.

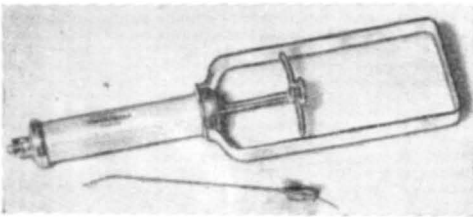


Fig. 1. S. Franzen's syringe for cytodiagnostic puncture.

For obtaining cytological material by puncture, a special syringe (Fig. 1), has been devised by S. Franzen, Radiumhemmet, Stockholm. In order to make sure that a sufficient number of cells are drawn in with the tissue fluid, it is necessary to aspirate strongly using a fine needle (external diameter approx. 0.5 mm). Coarser needles are liable to become blocked by tissue fragments, making aspiration impossible. The smears are prepared in the usual way\* and stained by the May-Grünwald-Giemsa method.

**Material and Results :** In addition to blood and bone marrow examination, which will not be further discussed here the puncture method

has been used at the dermatological clinic of the Karolinska Sjukhuset for the examination of lymph nodes (adenogram) and the skin (dermogram). The indications for cytodiagnosis were as follows: Hodgkin's disease, mycosis fungoides, adenopathies of various aetiologies, cancer metastases, and tuberculosis. All the cases were also examined histopathologically in the histological laboratory of the dermatological clinic.

**Adenogram :** In a normal lymph node puncture specimen, the predominant cells are lymphocytes of the same type as those found in the peripheral blood, together with somewhat larger and younger lymphatic elements. These include a few lymphoblasts, which may be similar in appearance to the myeloblasts. Cells belonging to the reticuloendothelial system, sero-endothelial, and epidermal cells are seldom seen. The pathological significance of the adenogram and dermogram is evaluated on the basis of the criteria of malignancy listed in the table.

TABLE

*Cytodiagnosis criteria of malignancy*

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1. Nuclear polymorphism: changes in size and shape, anisokaryosis and hyperchromasia.
  2. Increase in the size of the nucleus relative to the cytoplasm.
  3. Increase in size or deformation of the nucleoli.
  4. Dissociation of the cytoplasm: ill-defined cell outlines.
  5. Abnormal mitoses: multipolar, asymmetrical mitoses.
  6. A typical giant cells.
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In lymphadenitis dermatopathica the appearance is often one of pseudomalignancy, with marked proliferation of abnormal reticulo-endothelial cells and eosinophilia.

In Hodgkin's disease, the adenogram is characterised mainly by the presence of Sternberg-Reed cells, and by nuclear polymorphism of the lymphocytes and reticulo-endothelial cells. The Sternberg-Reed cells have lobed nuclei (diameter 14-15  $\mu$ ), a loose chromatin structure, and large ebule nucleoli.

The adenogram in mycosis fungoides can often be distinguished from that in Hodgkin's disease by the absence of Sternberg-Reed giant cells.

The lymphadenoses usually present a uniform cell picture comprised solely of lymphocytes which exhibit marked evidence of malignancy although varying in their degree of polymorphism.

Tuberculosis of the lymphatic glands is characterised by the presence of epithelioid cells and Langhan's giant cells.

Cytological examination is often indicated in cases of enlarged lymph nodes. At the dermatological clinic of the Karolinska Sjukhu-

set, a patient with herpes zoster, was found in this way to have a plasma cell sarcoma.

**Dermogram :** A normal dermogram, i.e. one prepared from a puncture specimen of normal skin, contains very few cells. Only the occasional reticulo-endothelial cells, lymphocytes, and neutrophils are seen.

In the pathological dermogram, it is the quantitative changes that are of the greatest significance. One particular type of cell is often found to predominate. Malignant lymphosarcoma is an example of a disease that can be diagnosed by an accurate differential cell count.

In Hodgkin's disease and mycosis fungoides, the dermograms may often be identical during the plate and tumour stages. In some cases, the mycosis cells, which are immature, and the atypical reticulum cells attain a considerable size and resemble mononuclear and polynuclear Sternberg-Reed giant cells. Pronounced nuclear and cellular polymorphism is typical of Hodgkin's disease and mycosis fungoides. In the lymphadenises, both the dermogram and the adenogram are characterised by the fact that all the cells present are lymphocytes exhibiting clear evidence of malignancy. In such cases, blood and bone marrow examinations are indispensable.

The dermogram is of great value in cases of suspected cancer metastases. The risk of further metastases occurring as the result of organ or tumour puncture is negligible; indeed, many cytologists deny that there is any risk at all<sup>1</sup>.

Evaluation of the pathological adenogram and dermogram can furnish important diagnostic information. At the same time, however, a biopsy specimen should be obtained by excision and submitted to histological examination, in so far as this is indicated and technically possible.

#### SUMMARY

The advantages and disadvantages of clinical cytodiagnosis have been briefly discussed and details given of the puncture method. The cell picture in the normal adenogram and dermogram is described and attention drawn to the great importance of cytological examination of the adenogram and dermogram for the classification and evaluation of the degree of malignancy in Hodgkin's disease and adenopathies.

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#### REFERENCES

1. International Symposium über klinische Cyto-diagnostik. Thieme. Stuttgart 1953.
2. Degos, R., Ossipowksi, B. : *Dermatologica* 1957, 115, 482.