

## CELLS CONTAINING LANGERHANS GRANULES IN HUMAN LYMPH NODES OF DERMATOPATHIC LYMPHADENOPATHY\*

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### ABSTRACT

Cells containing Langerhans granules are found in human lymph nodes of dermatopathic lymphadenopathy. The ultrastructural characteristics of these cells are identical to the epidermal Langerhans cells of the same patients. The possible development of Langerhans cells from mesenchymal tissues is discussed.

Birbeck, Breathnach and Everall (1) introduced the term Langerhans granule to designate a characteristic organelle in the Langerhans cell of the epidermis. This epidermal Langerhans cell has long been thought to occupy a place in the life span of the melanocyte. However, this cell is not found exclusively in the epidermis, but is observed in the neural crest free tissues and dermal lesions of the various skin diseases (2, 3, 4, 5). A number of investigators quote these as evidence that the Langerhans cell is unrelated to the melanocyte and propose that it may stem from the mesenchymal cell of the dermis.

We report the finding of Langerhans cells in lymph nodes of patients with eczematous dermatitis.

### MATERIALS AND METHODS

We studied axillary, femoral and inguinal lymph nodes of seven patients with generalized eczematous dermatitis. Specimens were cut into small pieces, fixed for 2 hours in 2 per cent buffered osmium tetroxide (pH 7.4), dehydrated in ethanol and embedded in Epon 812 according to the method of Luft. Ultrathin sections were made with a Porter-Blum ultramicrotome MT-2 using a Du Pont diamond knife. The sections were stained with uranyl acetate and lead citrate, and examined with a Hitachi HU-11 A electron microscope.

### RESULTS

Cells containing Langerhans granules were found in the femoral lymph nodes of two pa-

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tients with generalized eczematous dermatitis. The nucleus of these cells was pale and irregular in outline. The cytoplasm contained filamentous structures and numerous pinocytotic vesicles, together with the other usual intracytoplasmic organelles. Characteristic Langerhans granules were observed. The fine structure of these granules was identical with those found in the epidermis of the eczematous lesion from the same patients. They were usually rod-shaped granules with linear striated lamellae midway between their two limiting membranes. Langerhans granules attached to the plasma membrane or of racquet shape were rarely seen. The precise distribution of these cells was uncertain. However, some of them were found at the perifollicular region of the lymph node.

### DISCUSSION

Recent electron microscopic studies suggest that Langerhans cells are widely distributed in various tissues. Besides the epidermis and pilosebaceous system (6), they have been observed in the dermis of the normal skin, histiocytosis X, benign appendageal tumors, reticulum cell sarcoma, basal cell epithelioma, pityriasis rosea, oral leukoplakia and Ehlers-Danlos syndrome (3, 4, 5, 7, 8).

The significance of the distribution of Langerhans cells in extraepidermal and mesenchymal tissues is controversial. Zelikson (7) believed Langerhans cells in the dermis are due to the descent of epidermal Langerhans cells. On the contrary, Hashimoto *et al.* (4) emphasized ultrastructural similarities between Langerhans cells and histiocytes or macrophages and proposed that epidermal Langerhans cells are derived from the migration of dermal Langerhans cells into the epidermis. Kiistala *et*

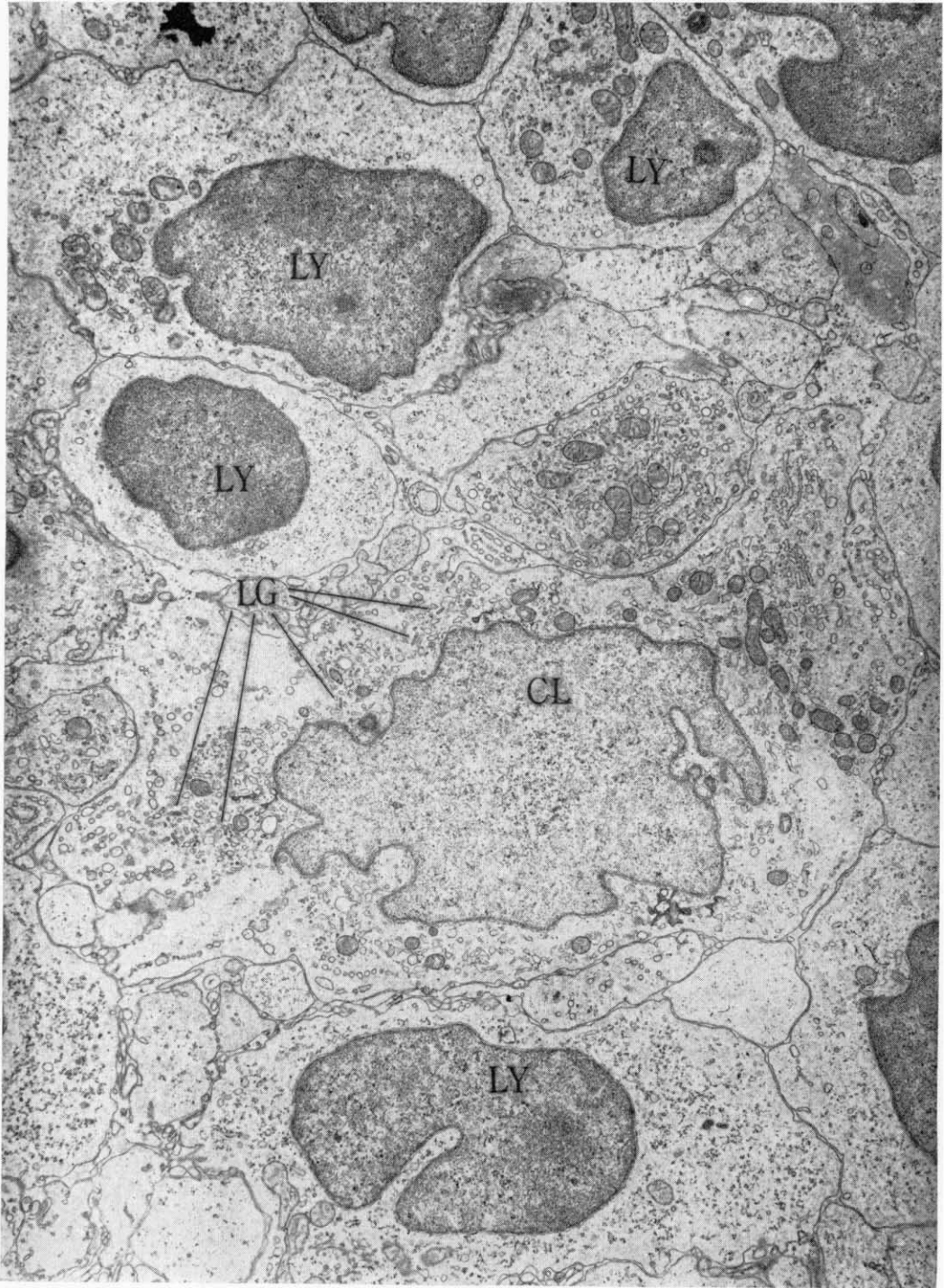


FIG. 1. A cell containing Langerhans granules is seen among lymphocytic cells in the human lymph node. Within the cytoplasm, numerous pinocytotic vesicles and Langerhans granules are present. Cell containing Langerhans granules (CL), Lymphocytic cell (LY), Langerhans granule (LG),  $\times 8,700$ .



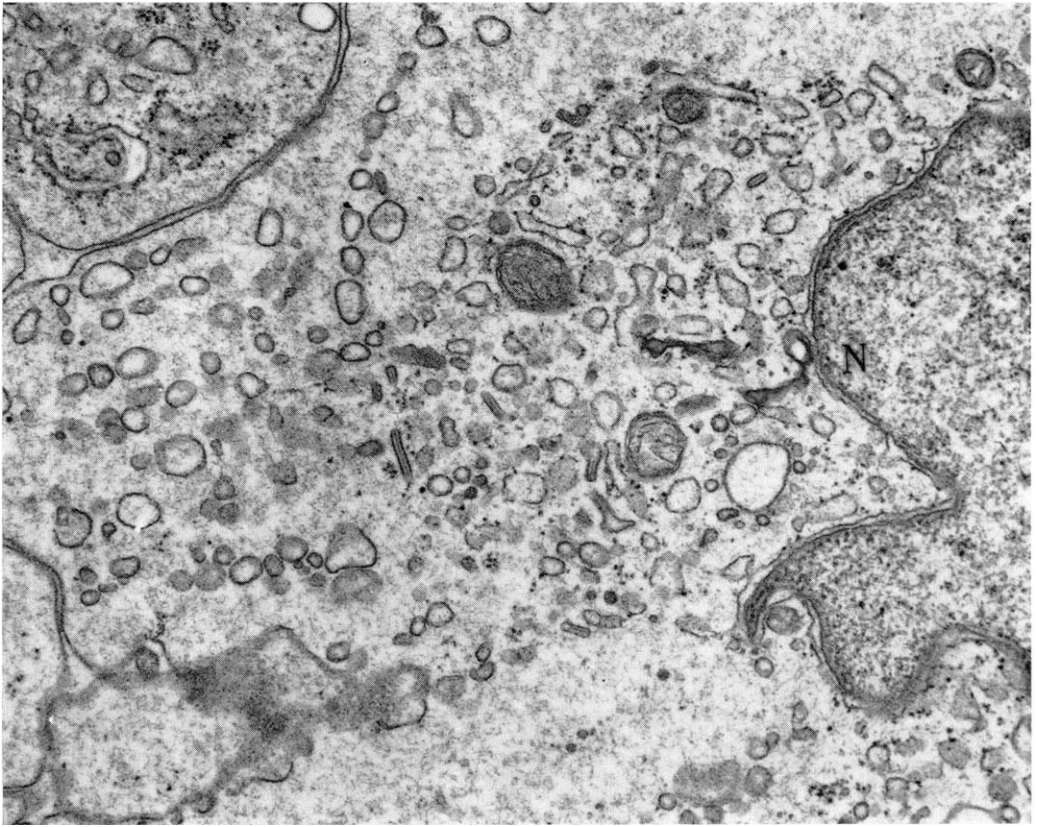


FIG. 2. Higher magnification of cell containing Langerhans granules. Langerhans granules forming the rod or racquet shape are seen. Nucleus (N)  $\times 29,000$ .

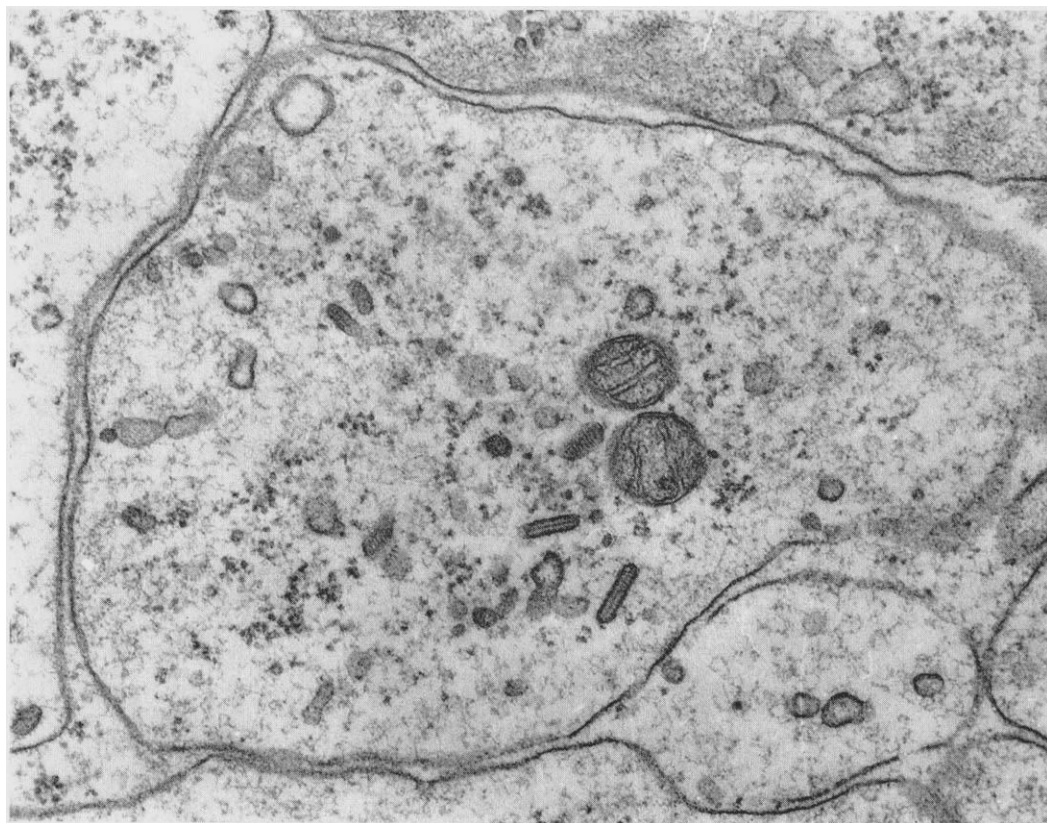


FIG. 3. The cytoplasm of a cell containing Langerhans granules is observed among the cells of the lymph node.  $\times 22,500$ .

*al.* (5) took a similar position and assumed that dermal mesenchymal cells are a potential source of epidermal Langerhans cells. Prunieras (9) also considered that Langerhans cells may originate from connective tissue. In addition, the occurrence of Langerhans cells in experimentally manipulated tissues lacking in melanocytes and also free of neural elements led Breathnach *et al.* (2) to conclude that Langerhans cells do not belong to the melanocyte lineage of cells, and that they do not stem from the neural crest. The above hypotheses are based on static pictures and the dynamic development of Langerhans cells remains unknown.

The present observations of the cells containing Langerhans granules in human lymph nodes, where cells originate from mesenchymal elements and melanocytes are apparently absent, may suggest that cells containing Langer-

hans granules are unrelated to melanocytes and may develop in the human lymph node, possibly from mesenchymal elements.

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