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Case Report

Histiocytosis X of Lungs and Kidneys

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Summary. Report on a case of histiocytosis X of the lungs and kidneys. The pulmonary changes occured mainly during the fibrotic phase of the illness. In the kidneys, the process had a distinct granulomatous character with direct transition into a scarring final stage. Unusual was the considerable vascularisation of the pulmonary foci. Because of the large amount of plasma cells, particularly in the renal cortex, an allergic-hyperergic pathogenesis of the illness had to be discussed.

Key words: Histiocytosis X — Lungs — Kidneys — Capillaries — Plasma cells.

The term "histiocytosis X", first used by Lichtenstein (1953), covers a reticulohistiocytic proliferation of uncertain aetiology, including—apart from the Letterer-Siwe-disease, Hand-Schüller-Christian-disease and eosinophilic granuloma—also such syndromes which do not fit into one of the three classic types. Illnesses, limited to the lung or affecting it together with other diseases, have been described repeatedly (Literature by Rossenbeck, 1967). Histiocytosis X is often not recognized, because the proliferating histiocytes can alter their character and in the later phases the disease may give the impression of an organic fibrosis. These difficulties were experienced when interpreting this case, and it was only with the kind support of Professor Dr. H. Spencer, London, that we were able to clarify it.

Clinical History

This 80 years old man was hospitalized in January 1973 because of dyspnoea, which had lasted for three years and had increased terminally. Blood pressure, laboratory findings and ECG were normal; chest x-ray showed disseminated mottled opacities which were interpreted as carcinosis rsp. fibrosis. He died within a short time due to cardiopulmonary failure.

Post mortem: *Pathological Anatomy.* Heavy consolidated *lungs* with smooth pleura; on the cut surfaces numerous disseminated, light grey, compact foci, 0.2–2 cm in size, unconnected with the larger bronchi or vessels and present throughout the lung sections.

Kidneys. Surface adherent to the fibrous capsule; bluntly bordered, compact, whitish infarct-like lesions, involving most of both organs and spreading to the renal hilum on both sides. Other organs were without any substantial pathological changes.

Histology: *Lungs.* In the alveolar septa and in the peribronchial tissue there were numerous disseminated nodular granulomas, partly confluent forming larger fibrotic conglomerates. Apart from collagenous fibres and a fine argyrophilic network, there was a sparse cellular infiltration, consisting of plasma cells, lymphocytes, fibroblasts and few histiocytes, some with containing lipoid deposits. There was considerable capillary vascular proliferation in the foci. The lung tissue between the lesions was emphysematous without distinct cystic metamorphosis. *Kidneys*: Partial destruction and replacement of the renal parenchyma in the

Fig. 1. Large-area section of the lung. Numerous mottled dense structures, in parts confluated to larger foci. HE, reduction 1:3

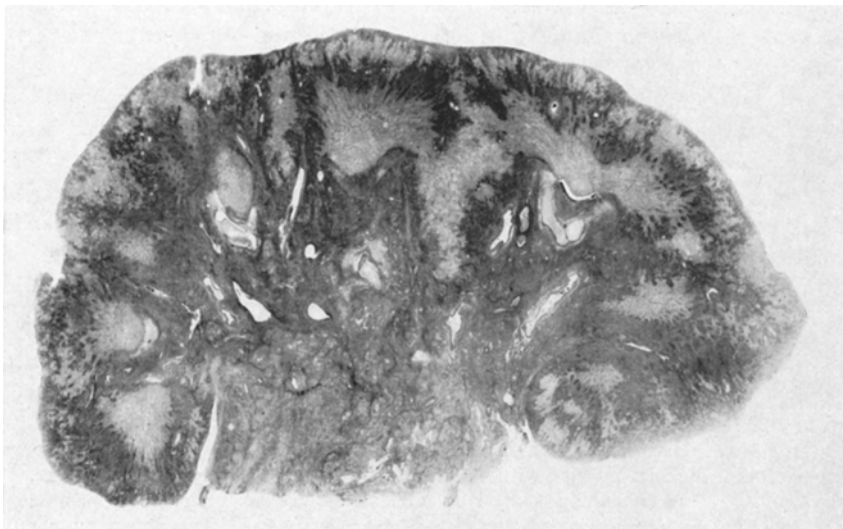

Fig. 2. Large-area section of the kidney. Multiple infarct-like areas (light grey) in cortex and medulla. HE, magnification 1:1

medullary region by a compact granulation tissue, rich in collagenous fibres and interspersed with infiltrations of histiocytes, plasma cells, lymphocytes and some eosinophilic granulocytes. There was distinct capillary vascular proliferation with adventitial giant cells, particularly in the border zones adjacent to the still intact parenchyma, and occasional histiocytes with fine lipid droplets. The process spread with a strong scarring tendency to the perihilar tissue. In the cortex there was predominance of the focal and cuneate infiltrations with numerous cells, mostly plasma cells and a few lymphocytes.

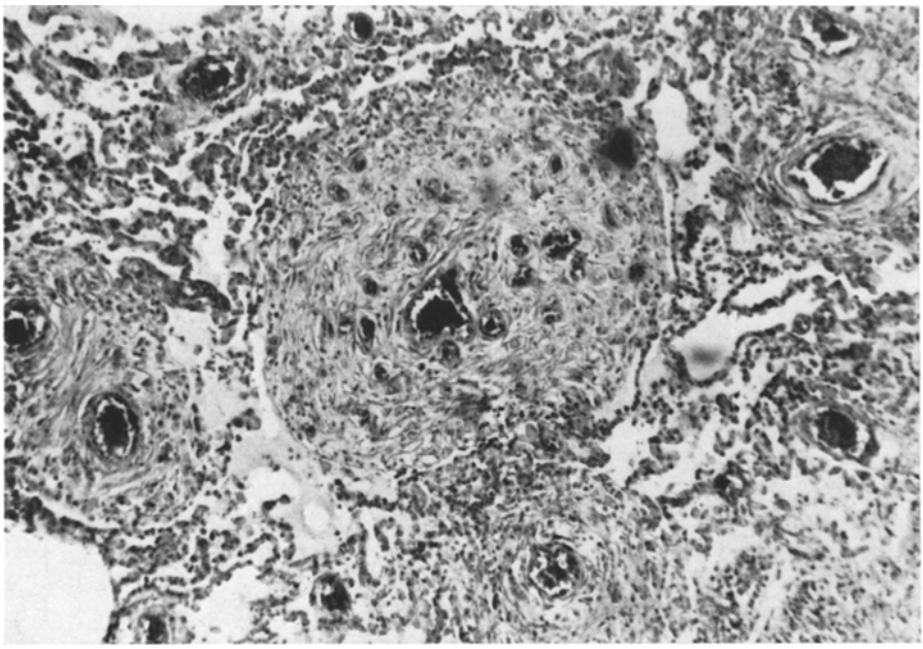

Fig. 3. Lung. Perivascular fibrotic granulomas with capillary proliferation and sparse cell infiltration. HE, magnification 63fold

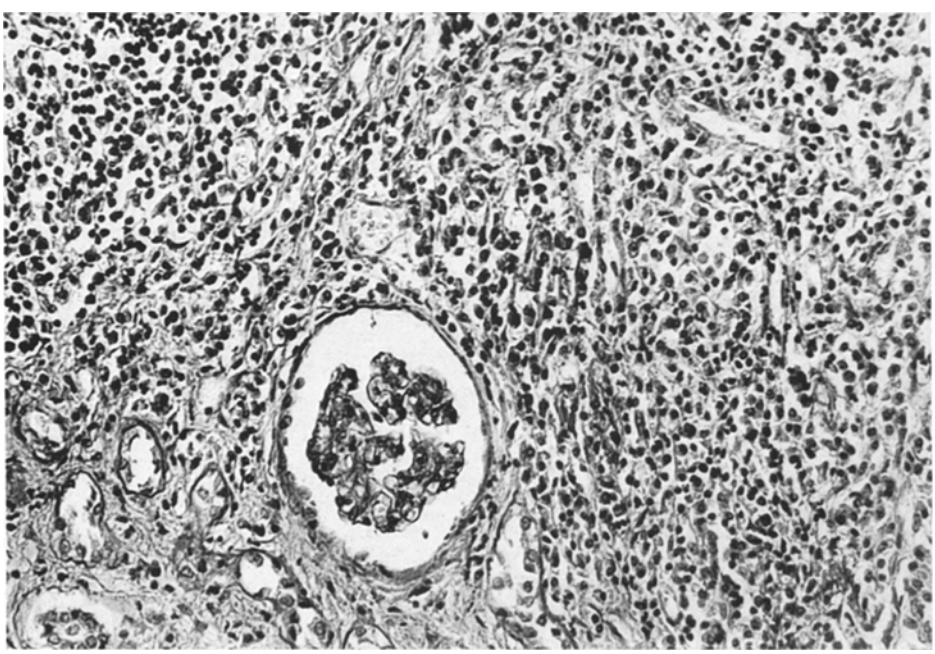

Fig. 4. Kidney. Dense, mainly plasma cell-infiltration in the cortex. Partial destruction of the parenchyma. HE, magnification 160fold

Discussion

If one follows the classification by Engelbreth-Holm *et al.* (1944)—made from a study of eosinophilic bone granuloma but applicable to the Hand-Schüller-Christian-disease of the lungs—mention was made of a proliferative, granulomatous, xanthomatous and fibrotic healing phase. In the present case the histiocytosis X changes in the lungs were in the fibrotic phase and in the kidneys were in the granulomatous and fibrotic phase, with direct transition from one stage to the other. The lack of the xanthomatous phase has been described repeatedly (Rossenbeck, 1967, and others). Masshoff (1949) and Spencer (personal information) explained the lack of xanthoma cells as the consequence of the chronicity and end stage of the process, and Cavanagh and Russell (1954) because of the lipopenia of the lung tissue.

The disseminated changes, present in all lung sections, started in the adventitia of the vessels and bronchioli and then extended nodular-like into the alveolar septa. The great number and occasional angioma-like arrangement of the capillaries in the perivascular scarred areas rather suggested a regeneration, not a condensation of performed vascular trunks caused by constriction of the scar tissue. The lung arteries had intact walls and their lumens showed little constriction and therefore the increased formation of capillaries cannot be regarded as a compensatory mechanism due to a constricted vascular system. There was no pulmonary heart disease. Because the small arteries of the lung showed no endarteritis changes and as the bronchioli showed no obstruction, necrotic changes had not taken place during the course of the illness, otherwise cyst formation might have occured in the fibrotic healing phase (Heppleston, 1956; Auld, 1957). The lesions in the lungs must be considered to be the end product of a long lasting process.

Very similar alterations were seen in the kidneys. Here the process was not circumscribed but compact with the main changes in the medullary region in the granulomatous phase and with transition to the adjacent hilar tissue with formation of cell-deficient callosities. In the cortex, the infiltrations mainly consisted of plasma cells and fewer lymphocytes.

Morphologically, in both lungs and kidneys the process was the same, and varied in shape only due to the preformed structures of both organs and possibly because of the different age of the lesions. The simultaneous presence of different, histomorphologically defined phases of histiocytosis X in a focus has also been mentioned by Auld (1957) and Liebig and Preussler (1971). The involvement of kidneys and/or the hilar kidney tissue during histiocytosis X is rare. Adams and Kraus (1950) as well as Rossenbeck (1967) described eosinophilic granulomas of the kidneys, and in the case described by Goldner and Volk (1955) large areas of the kidneys and the hilar tissue had been destroyed by a granulation tissue rich in histiocytes, reticulum cells and eosinophiles.

Concerning the differential diagnosis panarteritis nodosa or Wegener's granulomatosis was excluded because of the absence of necrotic vascular changes, and the so-called sclerosing angioma (histiocytoma), because the pulmonary lesions were spread diffusely over all sections. Contrary to the findings in our case, the chronic type of progressive lung fibrosis (Hamman-Rich) has no periadventitial concentration.

The aetiology of histiocytosis X is unknown. Lichtenstein (1953) and others assume an infection. A virus infection is possible, because in the lymphatic system this can cause very considerable reticulum cell proliferations in the sense of a systemic hyperplasia. Unfortunately we don't have electrophoresis of the plasma proteins in our case. The large number of plasma cells in the lesions, particular in the cortex of the kidneys, could, however, indicate an allergic-hyperergic process.

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