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CHANGES OF IMMUNOCOMPETENT CELLS OF THE MAMMARY GLAND IN THE COURSE OF THE REPRODUCTIVE CYCLE IN MICE

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The quantitative changes of the terminal portions, excretory ducts and stromas of the mammary gland of mice were histoplanimetrically studied in the course of the reproductive cycle, and the contributions of the immunocompetent cells: IgA-, IgG-, IgM-containing cells and T-lymphocytes to local immunity in the mammary gland were also immunocytochemically analysed.

It was shown that the relative area for the terminal portions increased from the 18th day of gestation and was maintained until the 21st day of the lactational period in parallel with the compensating quantitative changes of the stromas. The relative area of the ductal structures, however, showed only a small quantitative change during the periods examined, and in the epithelial cells of ducts, a difference in secretory ability was confirmed when they were compared with that of cells in the terminal portions. Both types of epithelial cells were from the same origin; however, the differences in their morphology, developmental pattern and ability in secretion may be due to the reactivities of each cell to hormones in the reproductive cycle.

An analysis of the quantitative changes of the lymphocytes and the T-lymphocytes in the terminal portions, the secretory ducts and the stromas and plasma cell series, including IgA-, IgG- and IgM-containing cells in the stromas during the reproductive cycle, was made. In the stromas, all these cells increased in number in the late gestational period and showed their maximum values in the late lactational period at 14 or 17 days after child-birth, there was a clear decrease in their number. Concerning the lymphocytes' appearance in the epithelium of the terminal portions, ducts and stromas, there was a difference in that the T-lymphocytes in the ductal epithelium were composed predominantly of lymphocytes and they rarely appeared in the terminal portions in the lactational period.

These results suggest the mice T-lymphocytes and immunoglobulin-containing plasma cells may migrate into the mammary gland to make immunological barriers along the terminal portions and the ductal structures and be especially active during late gestation and early lactation.