

LYMPHOGRAPHIA**SURFACE STRUCTURE AND CELL ZONATION IN HUMAN OMENTAL MILKY SPOTS****M. Shimotsuma, A. Hagiwara, T. Takahashi, M. Kawata, J.W. Shields**

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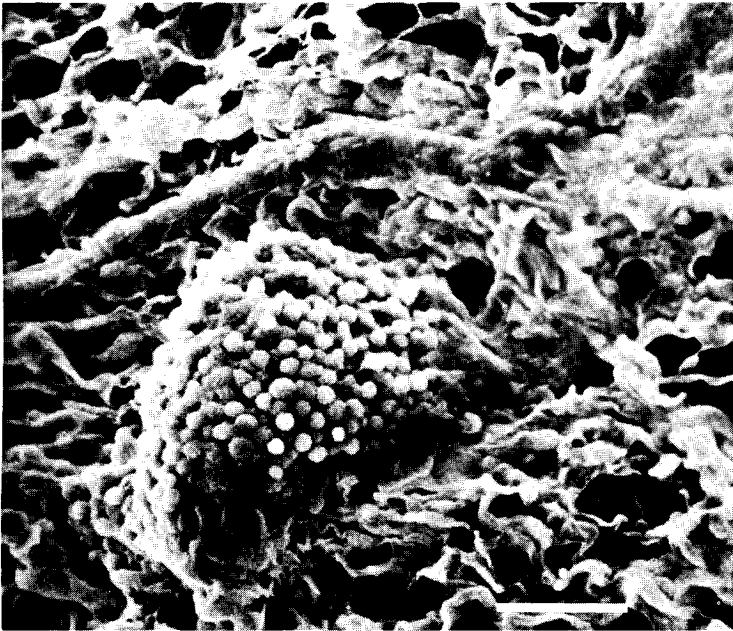


Fig. 1. Scanning electron microscopic view of a human omental milky spot surface showing fenestrated mesothelial cells covering the omentum and becoming attenuated over a milky spot which protrudes into the peritoneal cavity. (Magnification x250; white bar=50 μ m)

Omental milky spots consist of layered mesenchymal cells surrounding capillary convolutions. Although these "spots" are probably analogous to other organized lymphatic tissues such as lymph

nodes, milky spots are not usually considered an integral portion of the lymphomyeloid complex. During previous histologic studies of human milky spots (1), we observed zones of mesenchymal cells in

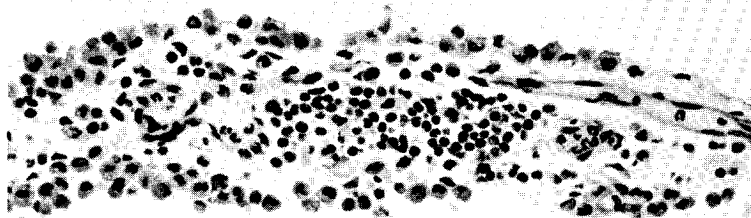


Fig. 2. Histologic section of human omentum containing a milky spot. Note the peritoneal surface is covered by many macrophages interspersed between mesothelial cells. The core contains blood and lymph vessels surrounded by dense collections of replicating and infiltrating lymphocytes in the supporting reticulostroma. (Hematoxylin and eosin $\times 200$)

relation to surface structure which implied differential cell growth in relation to antigen circulating in the peritoneal cavity.

We obtained omental milky spots from a seven-month-old boy who was without intraperitoneal inflammation and these were serially sectioned (2μ) for histology. Selected portions were dried (critical point drying), mounted, coated with platinum, and examined under scanning electron microscopy (SEM, Hitachi S-520LB). The peritoneal surfaces were covered by macrophages interspersed between fenestrated mesothelial cells (Fig. 1), whereas the central portion consisted of straight and convoluted vessels surrounded by dense organized collections of lymphocytes of peripherally decreasing size encased in a fine reticular stroma (Fig. 2).

COMMENT

From a developmental point of view, the peritoneal cavity acts as a large lymph sinus (2). The macrophages and fenestrated mesothelial cells covering the milky spots are typically oriented toward this sinus. Our previous studies (1) suggest that these cells respectively trap or permit entrance of foreign particles which, in turn, may induce immune responses in lymphocytes which grow or infiltrate to surround the core vessels. Thus, considering these cell zones which characterize the relation of vessels and sinuses or sinusoids in all organized lymphoid tissues

(3), it seems reasonable that the omental milky spots are functioning as tiny regional lymph nodes responsive to the changing fluid and particulate contents of the peritoneal cavity.

From a clinical standpoint, these omental milky spots may function to absorb antigenic proteins or bacteria introduced into the fluid contents of the peritoneal cavity during gut inflammation, perforation, or at operation. Indeed, these "spots" may protect against supradiaphragmatic complications, especially if they function as barriers to circulating peritoneal antigens before the latter can pass through the porous mesothelium covering the inferior surface of the diaphragm (4).

REFERENCES

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