

## Immunohistochemical Characteristics of Histiocytes in Lymph Node Associated with Yellow-Brown Bodies

Masachika SENBA\*, Kioko KAWAI\*\* and Hidekatsu MATSUMURA\*\*\*

\* *Department of Pathology, Institute of Tropical Medicine,  
Nagasaki University, Nagasaki 852, Japan.*

\*\* *Department of Pathology, Nagasaki University School of  
Medicine, Nagasaki 852, Japan.*

\*\*\* *Department of Anatomy, Nagasaki University School of  
Medicine, Nagasaki 852, Japan.*

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**SUMMARY :** Yellow-brown bodies were observed in the sinusoids of lymph nodes and histiocytes. The authors confirmed immunohistochemical reactivity of alpha-1-antichymotrypsin, lysozyme, and alkaline phosphatase in non-phagocytic histiocytes, and phagocytic histiocytes which contained yellow-brown bodies. Histiocytes with yellow-brown bodies were not reacted to alpha-1-antichymotrypsin, lysozyme, and alkaline phosphatase. On the other hand, histiocytes without yellow-brown bodies were reacted to alpha-1-antichymotrypsin, lysozyme, and alkaline phosphatase.

### INTRODUCTION

Yellow-brown bodies were first described by HAMAZAKI in 1938 in the mesenteric lymph nodes of a patient with appendicitis.<sup>3)</sup> Wesenberg reported similar structures, such as round or spindle shaped bodies in the lymph nodes of patients with sarcoidosis in 1966.<sup>6)</sup> Yellow-brown bodies are significantly more common in sarcoidosis than in other conditions.<sup>1~6)</sup> However, their pathogenesis and significance are not well understood. The authors examined immunohistochemical properties of histiocytes with and without yellow-brown bodies, which were observed in two cases of lymph nodes with sarcoidosis and with ileus.

### MATERIAL AND METHODS

Two cases of yellow-brown body specimens

were obtained from Nagasaki University Hospital with sarcoidosis and with ileus.

The specimens were fixed in 10% formalin and embedded in paraffin. Sections were cut at four micron and stained with hematoxylin-and-eosin, and Fontana-Masson's silver.

Histiocytes with and without yellow-brown bodies were stained with alpha-1-antichymotrypsin (Dako PAP Kit), lysozyme (Dako PAP Kit), and alkaline phosphatase (Alkaline phosphatase conjugated Strept-Avidin : Bio Genex Laboratories ; Naphtol AS-MX phosphate ; Fast red salt).

### RESULTS

Yellow-brown bodies were diffusely present in the sinusoids of the lymph nodes, and located within the cytoplasm of histiocytes. The larger bodies were detected extracellularly, and smaller bodies were within the cytoplasm of histio-

cytes. These bodies were stained intensely black with Fontana-Masson's silver method (Fig. 1) which could be suitable for rapid screening and identification of yellow-brown bodies.

Histiocytes without yellow-brown bodies were stained with alpha-1-antichymotrypsin (Fig. 2), lysozyme (Fig. 3), and alkaline phosphatase (Fig. 4). On the other hand, histiocytes with yellow-brown bodies were not stained with alpha-1-antichymo-trypsin (Fig. 2), lysozyme (Fig. 3), and alkaline phosphatase (Fig. 4).

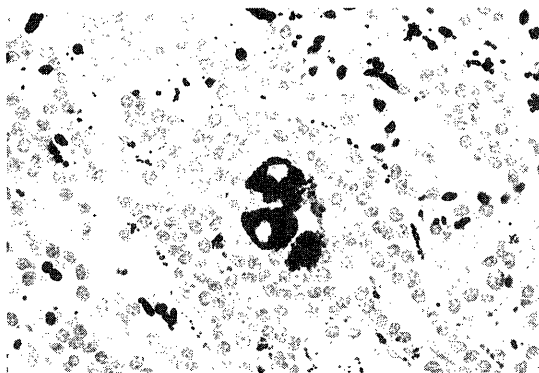


Fig. 1. Varying sizes and shapes of yellow-brown bodies are seen in the sinusoids of the lymph node and in the histiocytes. Fontana-Masson's silver stain  $\times 400$ .

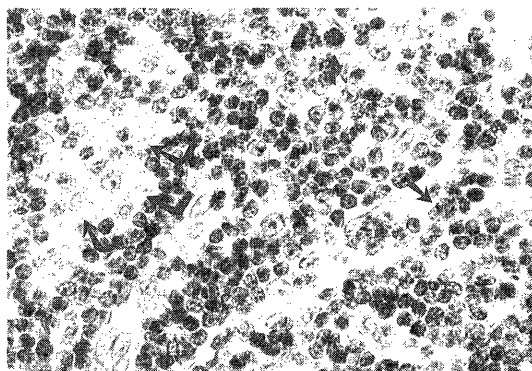


Fig. 2. Histiocytes without yellow-brown bodies are stained with alpha-1-antichymotrypsin (straight arrow), but histiocytes with yellow-brown bodies are not stained (curved arrow). Yellow-brown bodies are seen in the sinusoids of the lymph node. Immunoperoxidase stain for alpha-1-antichymotrypsin  $\times 400$ .

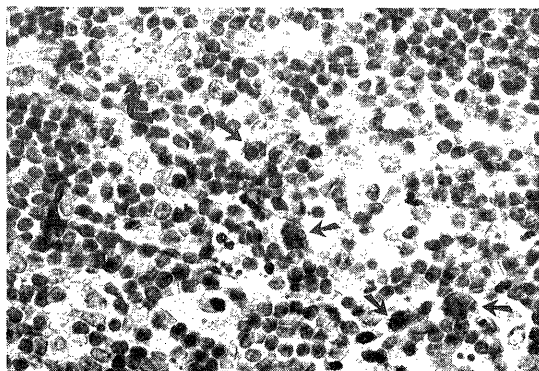


Fig. 3. Histiocytes without yellow-brown bodies are stained with lysozyme (straight arrow), but histiocytes with yellow-brown bodies are not stained (curved arrow). Yellow-brown bodies are seen in the sinusoids of the lymph node. Immunoperoxidase stain for lysozyme  $\times 400$ .

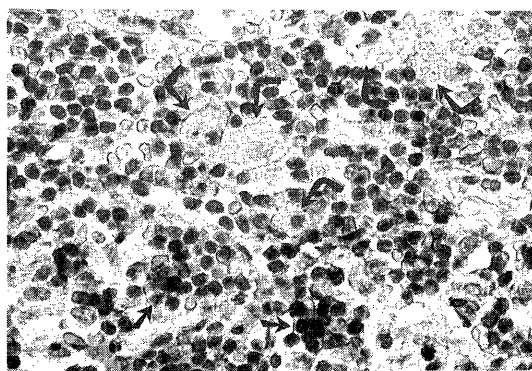


Fig. 4. Histiocytes without yellow-brown bodies are stained with alkaline phosphatase (straight arrow), but histiocytes with yellow-brown bodies are not stained (curved arrow). Yellow-brown bodies are seen in the sinusoids of the lymph node. Stain for alkaline phosphatase  $\times 400$ .

## DISCUSSION

Immunoreactivity of phagocytic histiocytes is clearly different from non-phagocytic histiocytes. A possible explanation may be that some enzymes are released from phagocytic histiocytes, or immunologically active sites are masked as a result of phagocytosis. Immunohistochemical nature of histiocytes varies in different organs, different disease, and subpopu-

lation of histiocytes. Further study from this point of view might lead to a significant contribution.

Yellow-brown bodies must be distinguished from hemosiderin pigments which show yellowish color in hematoxylin-and-eosin stained sections. There is difference between yellow-brown bodies and hemosiderin pigments. Hemosiderin pigments react with iron stain and not auto-fluorescent under ultraviolet illumination. Yellow-brown bodies are mainly located in sinusoids of lymph nodes, but hemosiderin pigments are not.

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