Mast Cells in Uveitis: Morphological Study


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The role of mast cells in the mechanism of uveitis seems to be very important, but no reports have appeared so far on the morphology of mast cells in uveitis. We observed the number of mast cells present and performed morphological studies by light microscopy and electron microscopy in the iris of patients with uveitis.

Materials and Methods

We studied 36 irises of patients with uveitis; 13 with leprosy, 11 with Behcet's disease, 8 with Vogt-Koyanagi-Harada disease, and 4 with unclassified uveitis. The irises were removed at cataract or glaucoma surgery.

1. Mast cells numbers: Irises were fixed in a mixture of 2% paraformaldehyde and 2.5% glutaraldehyde solution, embedded in paraffin, stained toluidine blue (pH 2.5) and alcian blue (pH 2.5), and observed under a light microscope.

2. Morphological study of mast cells: Irises were fixed in 2.5% glutaraldehyde solution, post fixed in 1% osmium tetroxide solution, and embedded in Epon. Ultrathin sections were made and double stained with uranyl acetate and lead citrate and observed under an electron microscope.

Results & Discussion

A large number of mast cells existed in the irises of the patients with leprosy and Behcet's disease (Table 1). The number of mast cells in leprosy and Behcet's disease was increased compared with that in normal irises, observed under a light microscope (Fig.1). The ultrastructure of mast cells in the irises of patients with uveitis showed 2 forms. In one form there was degranulation of mast cells, while in the other form there were many granules in the cells (Fig.2). We failed to find a characteristic of each type of uveitis. Our studies have raised some problems to be solved.

Table 1. The number of eyes with mast cells in the iris

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of Eyes</th>
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<tbody>
<tr>
<td>Leprosy</td>
<td>11/13 eyes</td>
</tr>
<tr>
<td>Behcet's disease</td>
<td>9/11 eyes</td>
</tr>
<tr>
<td>Vogt-Koyanagi-Harada disease</td>
<td>0/8 eyes</td>
</tr>
<tr>
<td>Unclassified uveitis</td>
<td>2/4 eyes</td>
</tr>
<tr>
<td>Normal</td>
<td>3/13 eyes</td>
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Fig.1 toluidine blue stained section
x 350
(mast cell)

Fig.2 mast cells showed 2 forms
left: degranulation of mast cell
right: many granules in the mast cell

with regard to the following: 1) The iris lesion was very localized. 2) Uveitis was not active in these cases, because we can operate on the patients in the last stage or stable stage of uveitis.

In another study, skin and oral specimens from lesions in patients with active Behcet's disease revealed a significant increase in the number of mast cells, and that the concentration of histamine was increased. (1) It has also been reported that a new antiallergic agent is useful for the treatment of Behcet's disease. (2) It has been suggested that the mechanism of uveitis involves allergic reactions of type 1 or type 4. Thus, the role of mast cells in uveitis seems to be very important. Lengthly and careful consideration should be given to the mechanisms of uveitis.

REFERENCES