Eosinophilic Pneumonia with Eosinophilic Gastroenteritis

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A 48-year-old man was admitted to our hospital with cough, fever and dysphagia. He had a past history of bronchial asthma and surgery for nasal polyp. Chest radiograph and computed tomography showed atelectasis in the right lower field and infiltrative shadow in the left lower field and overall thickening of the esophageal wall. Transbronchial lung biopsy (TBLB) specimens revealed infiltration of eosinophils and lymphocytes under the bronchial mucosa. Gastrointestinal tract biopsy specimens showed submucosal infiltration of eosinophils. These findings led to a definite diagnosis of eosinophilic pneumonia associated with eosinophilic gastroenteritis, a disease which has been rarely reported.

Key words: hypereosinophilic syndrome (HES), transbronchial lung biopsy (TBLB), esophageal wall

Introduction

Eosinophils play an important role in hypereosinophilic syndrome (HES) as well as in other allergic diseases such as asthma, parasite infection and atopic dermatitis (1-3). We report a case of eosinophilic pneumonia and eosinophilic gastroenteritis in a patient with a history of bronchial asthma, and discuss the pertinent literature (4, 5).

Case Report

A 48-year-old man was admitted to Kagoshima University Hospital on December 18, 1995, because of cough and dysphagia. He began to complain of transient dysphagia and epigastralgia while swallowing solids in August in 1995. Due to fever and cough on November 23, he visited a doctor. Since pneumonia was suspected, he was admitted to a local hospital and treated with antibiotics for relief of symptoms. Because findings did not improve on chest radiograph and chest computed tomography (CT), he was referred to our department for further examination and was admitted on December 18, 1995. He suffered from bronchial asthma at age 14 and underwent surgery for nasal polyp at age 42. His father had asthma. There was a history of allergy to penicillin and aspirin-like drugs. He had no smoking history. His height was 163 cm, his weight was 74 kg, blood pressure was 132/84 mmHg, pulse was 70 beats per minute (regular). His face and neck had no abnormal findings. Wheeze on expiration was audible in the whole lung field with fine crackles in the right lower field. Abdomen and extremities had no abnormal findings. Clubbed finger was not found. Neurological examination on admission revealed a decrease in olfactory sensation. Other sensations and deep reflexes were normal. Blood laboratory tests were performed on admission (Table 1). Neutrophilia and eosinophilia were present with elevated immunoglobulin E (IgE) and C-reactive protein (CRP). C-Antineutrophil cytoplasmic antibody (C-ANCA) was negative. Respiratory function test suggested obstructive ventilatory impairment with forced expiratory volume in one second of 1,330 ml and forced expiratory volume% in one second of 38.78% (<70%). An arterial blood gas analysis showed hypoxemia with the partial pressure of oxygen (PaO2) was 65.6 Torr in room air. Chest radiograph and chest CT showed atelectasis in the right lower field and an infiltrative shadow in the left lower field (right S 9, 10). Chest CT demonstrated overall thickening of esophageal wall (Fig. 1). Transbronchial lung biopsy (TBLB) specimens from B7 in the right lung under fiberoptic bronchoscopy showed infiltration of eosinophils and lymphocytes without granuloma under the bronchial mucosal after hematoxylin and eosin staining (Fig. 2A). Biopsy specimens of stomach and duodenum showed submucosal infiltration of eosinophils (Fig. 2B). Although scleroderma was considered as a differential diagnosis for digestive and respiratory symptoms with an elevated scleroderma antibody 70 (ScI-70) on admission, the above findings led to a definite diagnosis of...
Table 1. Laboratory Findings on Admission

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>WBC</td>
<td>12,000/µl</td>
</tr>
<tr>
<td>Neu</td>
<td>64%</td>
</tr>
<tr>
<td>Eo</td>
<td>6%</td>
</tr>
<tr>
<td>Baso</td>
<td>1%</td>
</tr>
<tr>
<td>Mono</td>
<td>7%</td>
</tr>
<tr>
<td>Lymph</td>
<td>22%</td>
</tr>
<tr>
<td>RBC</td>
<td>493 × 10^6/µl</td>
</tr>
<tr>
<td>Hb</td>
<td>14.8 g/dl</td>
</tr>
<tr>
<td>Ht</td>
<td>46.1%</td>
</tr>
<tr>
<td>Platelet</td>
<td>35 × 10^4/ml</td>
</tr>
<tr>
<td>AST</td>
<td>20 IU/l</td>
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<tr>
<td>ALT</td>
<td>22 IU/l</td>
</tr>
<tr>
<td>γ-GTP</td>
<td>47 IU/l</td>
</tr>
<tr>
<td>LDH</td>
<td>422 IU/l</td>
</tr>
<tr>
<td>BUN</td>
<td>14.2 mg/dl</td>
</tr>
<tr>
<td>Cr</td>
<td>0.9 mg/dl</td>
</tr>
<tr>
<td>UA</td>
<td>5.9 mg/dl</td>
</tr>
<tr>
<td>Na</td>
<td>143 mEq/dl</td>
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<tr>
<td>K</td>
<td>4.0 mEq/dl</td>
</tr>
<tr>
<td>FBS</td>
<td>84 mg/dl</td>
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<tr>
<td>T-CHO</td>
<td>171 mg/dl</td>
</tr>
<tr>
<td>Total protein</td>
<td>8.5 g/dl</td>
</tr>
<tr>
<td>albumin</td>
<td>47.1%</td>
</tr>
<tr>
<td>A/G</td>
<td>0.89</td>
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<tr>
<td>IgE (RIST)</td>
<td>4,087 IU/l</td>
</tr>
<tr>
<td>C3</td>
<td>186 mg/dl</td>
</tr>
<tr>
<td>C4</td>
<td>41.4 mg/dl</td>
</tr>
<tr>
<td>C-ANCA</td>
<td>&lt;10 EU</td>
</tr>
<tr>
<td>CRP</td>
<td>53.4 mg/dl</td>
</tr>
<tr>
<td>HTLV-1</td>
<td>(-)</td>
</tr>
<tr>
<td>Scl-70 Antibody</td>
<td>13.1 Index</td>
</tr>
<tr>
<td>Pulmonary Function Test</td>
<td>3,390 ml</td>
</tr>
<tr>
<td>VC</td>
<td>93.4%</td>
</tr>
<tr>
<td>FEV1.0</td>
<td>1,330 ml</td>
</tr>
<tr>
<td>FEV1.0%</td>
<td>38.78%</td>
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Blood Gas Analysis (room air)

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<th>Parameter</th>
<th>Value</th>
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<tr>
<td>pH</td>
<td>7.440</td>
</tr>
<tr>
<td>PaCO₂</td>
<td>37.5 Torr</td>
</tr>
<tr>
<td>PaO₂</td>
<td>65.7 Torr</td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>25.4 mmol/l</td>
</tr>
</tbody>
</table>


Figure 1. Chest radiograph and CT on admission. Chest radiograph showed atelectasis in the right lower field and infiltrative shadow in the left lower field. Chest CT showed overall thickening of the esophageal wall.
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eosinophilic pneumonia associated with eosinophilic gastroenteritis. Relief from symptoms and a decrease in CRP were noted after the treatment with corticosteroids started on January 20, 1996. Chest CT on March 14 showed improvement in atelectasis and esophageal wall thickening (Fig. 3).

Discussion

Table 2 shows a list of diseases that are associated with peripheral eosinophilia (3, 6). Concerning drug allergies, the patient exhibited allergies to penicillins and aspirin-like drugs. However, he had not taken any drug at that time. Regarding malignancy, systemic radiological and hematological examinations revealed negative findings. We examined stool and hematological findings to identify parasites but the results were negative. The clinical symptoms of dysphagia and epigastralgia and elevated SCL-70 indicated scleroderma, but this case did not satisfy sufficient diagnostic criteria for collagen diseases. The patient demonstrated bronchial asthma at age 14. On admission, he complained of cough, and wheeze was audible. His eosinophilia may have been induced by allergic diseases including bronchial asthma. Eosinophilic gastroenteritis is characterized by peripheral eosinophilia and infiltration of eosinophils in the whole digestive tract, especially in the stomach,

Figure 2. A. Lung biopsy specimen (rt. B7). Infiltration of eosinophils (arrow) and lymphocytes was shown under the bronchial mucosal surface. (Hematoxylin and Eosin staining, × 400 ) B. Stomach biopsy specimen. Submucosal infiltration of eosinophils was found (arrows) (HE stain, × 200).

Figure 3. Pre-therapy and Post-therapy chest radiograph and CT. Post-therapy chest radiograph and CT showed improvement in atelectasis and esophageal wall thickening, compared with pre-therapy.
duodenum and small intestine. This case was consistent with eosinophilic gastroenteritis. On the other hand, patients with eosinophilic pneumonia have symptoms of cough, sputum and fever, findings of infiltration on plain chest radiography and CT, and eosinophilia on the blood cell count (6). The findings of this case also indicated eosinophilic pneumonia. The association of between eosinophilic pneumonia and eosinophilic gastroenteritis in multiple organs, as found in the present case, has rarely been reported. We found only 1 case report by Marnocha et al in English (4) and another case reported by Tanoue which was presented at a local meeting in Japan (5).

We examined the possibility that the condition of simultaneous infiltration of eosinophils in multiple organs is classified into the category of HES.

HES is defined as a condition where peripheral eosinophilia persists for more than 6 months or a patient with symptoms of eosinophilia who dies within 6 months without any other responsible disease associated with eosinophilia such as parasitic infection or allergy (1-3).

The present case indicated eosinophilic infiltration to multiple organs such as the lung and digestive organs, but neither severe nor long-term peripheral eosinophilia was observed. We considered that this case did not satisfy the HES criteria and diagnosed this patient as having eosinophilic pneumonia with eosinophilic gastroenteritis.

References