**Sarcoidosis in Southern Taiwan**
Chao-Chien Wu, Chien-Hung Chin, Yung-Fa Lai, and Ji-Chen Ho

**Purpose:** To investigate the disease characteristics of sarcoidosis in southern Taiwan, and to investigate diagnostic methods.

**Methods:** We retrospectively reviewed the medical records of all patients diagnosed with sarcoidosis at Chang Gung Memorial Hospital, Kaohsiung, from March 1988 to February 2002.

**Results:** A total of 12 patients (3 men, 9 women), with a mean age of 44.5 years, and a diagnosis of sarcoidosis by positive histology and either a typical chest roentgenogram or clinical presentation were included. All 12 patients had intrathoracic involvement (hilar or mediastinal lymph nodes, 12; lungs, 5), eight had skin involvement, and two had extrathoracic lymph node involvement. The most frequent biopsy specimens were from the skin (n = 10), followed by the intrathoracic lymph nodes (n = 4), lungs (n = 2), and extrathoracic lymph nodes (n = 2). Four patients had positive biopsies from two organs. Our data showed an older age distribution and a greater female predominance of the disease compared with Western countries. A higher rate of intrathoracic and skin involvement was also found, but the reason for this was not clear.

**Conclusions:** Greater awareness of possible skin involvement may enable chest physicians and clinical practitioners to suspect this condition earlier. A histologic diagnosis from skin biopsy should then be made, rather than using more invasive procedures.

Sarcoidosis is a multisystem granulomatous disorder of unknown etiology [1, 2], characterized histologically by the formation of noncaseating granulomas in the involved organs. It was probably first described as a dermatologic condition in 1877 by Hutchinson, and the histologic characteristics of the skin lesion were first revealed by Boeck. The disease most commonly affects young adults and may involve any organ, especially the bilateral hilar lymph nodes, lungs, skin and eyes. Clinical manifestations of the disease generally depend on the activity, degree and extent of tissue involvement, and patients present with a wide variety of symptoms, from only incidental roentgenographic findings to severe disability [3]. The criteria currently used to diagnose sarcoidosis are based on three main components: compatible clinical and/or roentgenographic evidence, histologic evidence of widespread noncaseating epithelioid cell granulomas, and the exclusion of other causes of granulomatous disorders [4].

Sarcoidosis is distributed worldwide, and is particularly prevalent among Europeans and black Americans; it seems to be fairly rare among Chinese, with only a few case reports and reviews documented in the English literature [5–8]. In Taiwan, mass community radiologic surveys that included 3.6 million people did not find one case of sarcoidosis [9]; the same result was noted in a similar survey among Chinese in Singapore [10]. Nevertheless, according to Perng et al [11], the incidence of sarcoidosis in Taiwan seems to have increased noticeably in the last three decades, but the reason for this is not known. In one study, the most frequent clinical symptoms were respiratory associations, and intrathoracic involvement was found in 97%; the most frequent extrathoracic involvement was observed in the skin (24%) [11]. The most common biopsy sources were the intrathoracic lymph nodes and the lungs, via invasive procedures.

In this report, we reviewed the medical records and analyzed the disease characteristics of all Taiwanese patients.
with a diagnosis of sarcoidosis at Chang Gung Memorial Hospital, Kaohsiung, during a period of 14 years. Due to a higher rate of skin involvement compared with that in Western countries, we emphasize the importance of paying more attention to possible skin involvement and using less invasive skin biopsy for histologic diagnosis.

**Materials and Methods**

We retrospectively reviewed the medical records of all patients with sarcoidosis diagnosed at our hospital from March 1988 to February 2002. The diagnosis of sarcoidosis was made on the basis of typical clinical manifestations, chest roentgenograms, pathologic evidence of noncaseating granulomas from at least one organ, and the exclusion of other causes of granulomatous disease. Data included age, sex, initial clinical signs and symptoms, chest roentgenogram, pulmonary function test, gallium-67 scan findings and biopsy site analysis.

**Results**

Sarcoidosis was diagnosed in three men and nine women, with a mean age of 44.5 years, between 1988 and 2002 (10 patients after 1996). Patient age ranged from 22 to 62 years, with a median of 45 to 46 years; only four patients were less than 40 years old.

Initial clinical presentation included intrathoracic associations (cough, dyspnea, chest pain or tightness; n = 8), skin lesions (n = 5), and palpable extrathoracic lymph nodes (n = 1) (Table). Two patients presented with both respiratory symptoms and skin lesions or palpable lymph nodes. According to chest roentgenograms and chest computerized tomography scans, all patients had hilar or mediastinal lymph node involvement; lung involvement was noted in only five patients. Extrathoracic involvement was documented with tissue evidence, including skin (n = 8) and extrathoracic lymph nodes (n = 2).

Positive biopsy sources were the skin (n = 10), intrathoracic lymph nodes (n = 4), lungs (n = 2), and extrathoracic lymph nodes (n = 2). Some patients had a positive biopsy from two organs or from a single organ at different times (Table).

**Table. Summary of case data**

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (yr)</th>
<th>Sex</th>
<th>Presentation</th>
<th>CxR + CT</th>
<th>PFT/DLCO</th>
<th>Ga-67</th>
<th>Extrathoracic involvement</th>
<th>Biopsy site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35</td>
<td>F</td>
<td>Skin lesion</td>
<td>HA + MA</td>
<td>Restrictive/ N</td>
<td>ND</td>
<td>Skin</td>
<td>Skin</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>F</td>
<td>Cough</td>
<td>HA + MA</td>
<td>Restrictive/↓</td>
<td>+</td>
<td>Skin</td>
<td>MLN + skin</td>
</tr>
<tr>
<td>3</td>
<td>45</td>
<td>M</td>
<td>Cough</td>
<td>HA + MA + LI</td>
<td>N/ND</td>
<td>+</td>
<td>Skin</td>
<td>Skin</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>F</td>
<td>Skin lesion</td>
<td>HA</td>
<td>ND/ND</td>
<td>+</td>
<td>Skin</td>
<td>Skin</td>
</tr>
<tr>
<td>5</td>
<td>44</td>
<td>F</td>
<td>Cough</td>
<td>HA + MA</td>
<td>ND/ND</td>
<td>ND</td>
<td>None</td>
<td>MLN</td>
</tr>
<tr>
<td>6</td>
<td>49</td>
<td>F</td>
<td>Chest pain, neck LN</td>
<td>HA + MA</td>
<td>N/ND</td>
<td>ND</td>
<td>Skin + LN</td>
<td>Skin + neck LN</td>
</tr>
<tr>
<td>7</td>
<td>52</td>
<td>F</td>
<td>Chest tightness</td>
<td>HA + MA</td>
<td>N/ND</td>
<td>ND</td>
<td>None</td>
<td>MLN</td>
</tr>
<tr>
<td>8</td>
<td>62</td>
<td>F</td>
<td>Skin lesion</td>
<td>MA</td>
<td>ND/ND</td>
<td>ND</td>
<td>Skin</td>
<td>Skin</td>
</tr>
<tr>
<td>9</td>
<td>46</td>
<td>M</td>
<td>Cough</td>
<td>HA + LI</td>
<td>Restrictive/ND</td>
<td>ND</td>
<td>None</td>
<td>MLN</td>
</tr>
<tr>
<td>10</td>
<td>38</td>
<td>F</td>
<td>Skin lesion</td>
<td>HA + MA + LI</td>
<td>ND/ND</td>
<td>-</td>
<td>Skin + LN</td>
<td>Skin + neck LN</td>
</tr>
<tr>
<td>11</td>
<td>22</td>
<td>M</td>
<td>Cough, skin lesion</td>
<td>HA + MA + LI</td>
<td>ND/ND</td>
<td>ND</td>
<td>Skin</td>
<td>Lung + skin</td>
</tr>
<tr>
<td>12</td>
<td>58</td>
<td>F</td>
<td>Dyspnea</td>
<td>HA + MA + LI</td>
<td>Obstructive*</td>
<td>ND</td>
<td>None</td>
<td>Lung</td>
</tr>
</tbody>
</table>

*Due to bronchial asthma. CxR = chest roentgenogram; CT = computerized tomography; PFT = pulmonary function test; DLCO = lung diffusion capacity; Ga-67 = gallium-67 scan; HA = hilar adenopathy; MA = mediastinal adenopathy; N = normal; ND = not done; MLN = mediastinal lymph node; LI = lung infiltration; LN = lymph node.

**Discussion**

Sarcoidosis has been considered rare among Chinese [12], and also in Taiwan [9]. However, the disease in Taiwan seems to have become more prevalent than is suggested by the scarcity of reports in the English literature over the last three decades. A higher awareness of the disease among clinicians and pathologists, and advances in diagnostic methods are suspected to have contributed to this change [11]. In our study of 12 cases over a 14-year period, 10 cases were diagnosed within the last 6 years, implying that the disease seems to have become more prevalent in Taiwan. This finding also supports Perng et al’s view that the incidence of sarcoidosis among Chinese in Taiwan has noticeably increased in the last three decades [11].

Sarcoidosis often affects young adults less than 40 years of age, peaking in those aged 20 to 29 years. Most studies suggest a slightly higher disease rate in women [13]. In Scandinavian countries and Japan, there is a second peak incidence in women older than 50 years [14]. However, in our study, both an older age distribution (mean age, 44.5 yr), with 66.6% of patients above 40 years old, and a greater female predominance (75%) were noted. Racial and/or environmental differences, or other factors contributing to this...
Sarcoidosis Among Chinese

unusual age and sex tendency, were not clear. Similar results were also mentioned in Perng et al’s report [11].

In this series, all patients had intrathoracic involvement (hilar or mediastinal lymph nodes, 12; lungs, 5) with abnormal chest roentgenogram findings. The frequency of intrathoracic involvement (100%) was higher than the 87% in Nagai’s report [12]. In addition, a rate of skin involvement (66.6%) higher than that reported in Western countries (20–35%) was noted [15]. Skin involvement is common in other series of Taiwanese patients [16, 17]. A larger series survey of sarcoidosis in Taiwanese patients is needed to provide further explanation of these differences in disease characteristics.

Two patients with initial presentations of hilar lymph node, lung, and skin involvement underwent both intrathoracic biopsies (open or transbronchial) and skin biopsies; both biopsy specimens were compatible with sarcoidosis (Cases 2 and 11). Two other patients visited the Chest Department at our hospital with respiratory symptoms, and sarcoidosis was suspected due to the typical chest roentgenogram findings. Because of an awareness of suspicious skin involvement, the chest physicians referred the patients to the Dermatology Department for a skin biopsy, instead of performing a hilar lymph node or lung biopsy, and the positive results later documented the diagnosis (Cases 3 and 6). These cases suggest the need for awareness that tissue biopsy specimens for histologic diagnosis are most readily and easily obtained from superficial or palpable lesions such as the skin; thus in a patient with features suggestive of systemic disease who has skin lesions, skin biopsy is preferable to more invasive procedures such as thoracotomy or bronchoscopy. Also, using a skin biopsy for pathologic confirmation has another advantage: skin lesions easily differentiate sarcoidosis from tuberculosis.

Because sarcoidosis has been so rarely diagnosed in Taiwan in the past, most local physicians are either unfamiliar with it or would reject the diagnosis. However, the incidence of sarcoidosis has increased in recent decades, so chest physicians and general practitioners should have a better recognition of sarcoidosis and know that the skin is the most frequent site of extrathoracic involvement. Paying more attention to possible skin involvement, and performing a skin biopsy instead of other more invasive procedures for histologic diagnosis, should be emphasized.

References