THE CLASSIFICATION of scleroderma has been a controversial subject primarily because adequate follow-up studies have been lacking. It is generally agreed that localized forms of scleroderma such as morphea and linear scleroderma are not progressive or systemic diseases and have a good prognosis. The same is true for scleroderma confined to the fingers and toes of patients with long-standing Raynaud’s disease (sclerodactylyia). It is in the classification of generalized or systemic scleroderma that confusion has arisen. In 1943, O’Leary and Waisman advocated perpetuation of the term “acroselerosis” first proposed by Hutchinson and favored by Sellei. These workers considered acroselerosis to be a relatively benign and only slowly progressing form of generalized scleroderma with Raynaud’s phenomenon as a constant and usually prominent clinical feature. The prognosis in acroselerosis was considered favorable when contrasted with that in “generalized progressive scleroderma,” in which the cutaneous changes usually appeared first on the trunk rather than acrally and in which Raynaud’s phenomenon was absent or minimal. Generalized progressive scleroderma was described by O’Leary and Waisman as a fulminating disease, usually culminating in death within 2 years.

In studies of Raynaud’s phenomenon and Raynaud’s disease among women and girls, many patients with Raynaud’s phenomenon were found to scleroderma (acrosclerosis) were contrary to the reputed good prognosis for patients with acrosclerosis, the present study was undertaken to correlate clinical findings, especially Raynaud’s phenomenon, with prognosis in patients with generalized scleroderma.

Material and Methods

The case records of all patients with scleroderma seen at the Mayo Clinic from January 1, 1945, to December 31, 1952, were reviewed and only those in which the diagnosis was first made during this period were included. There were 488 patients. The cases with only localized scleroderma (linear scleroderma, morphea, hemiatrophy, and sclerodactylyia secondary to Raynaud’s disease) were excluded. This left a total of 271 patients with generalized scleroderma (acrosclerosis or generalized progressive scleroderma) for whom the diagnosis was made during this 8-year period. Almost all of the patients were examined by consultants in the sections of dermatology or peripheral vascular diseases or both and an attempt had usually been made to designate the type of scleroderma according to O’Leary and Waisman’s classification. Most patients were considered to have acrosclerosis. The data from these 271 records were analyzed, and follow-up information was obtained by letter or by re-examination at the clinic.

Clinical Characteristics

Most of the 271 patients (73.4 per cent) were women and the average age at the time of diagnosis for the entire group was 42.9 years; for women it was 41.9 years, and for men 45.7 years (table 1). Raynaud’s phenomenon was present at some time during the course of the disease in 220 patients (81.2 per cent) and it was the initial symptom in 88 (table 2). In some cases, it was difficult to determine whether or not Raynaud’s phenomenon preceded the cutaneous sclerosis, as the
more spectacular vasospastic symptoms were often more noticeable to the patient than a mild degree of sclerosis. Patients seen shortly after the onset of Raynaud's phenomenon frequently were found to have scleroderma-tous changes which they had overlooked. In 132 the first symptom was stiffness or swelling of the hands. Five patients first noted trophic changes of the fingertips. Thus the first symptoms were referable to the hands in 83.0 per cent of the patients. Scleroderma on the trunk, a cardinal feature of O'Leary and Waisman's description of generalized progressive scleroderma, was noted as an initial symptom by only 2.6 per cent of our patients.

The involvement or complications at the time of the original diagnosis at the clinic are listed in table 3. "Trophic changes" refer to ulcerations, fissures, or chronic paronychias involving the fingertips. Pigmentation was noted in 45.0 per cent of the cases and frequently consisted of a generalized dusky-brown discoloration, usually more prominent in regions of sclerosis. As a result of this, the diagnosis of Addison's disease was entertained for several patients who had associated weakness and hypotension. Only 10.0 per cent of the patients had associated calcinosis cutis, and it usually involved the fingers and hands. Less often the deposits were found in the skin overlying the elbows or on the buttocks.

The trophic changes of 4 patients were severe enough to result in gangrene requiring amputations of one or more digits. No major amputations were necessary. Sympathectomy was carried out on 24 patients, being cervicothoracic in 19, lumbar in 1, and both in 4. Some of the patients had been operated on in the belief that the condition represented Raynaud's disease with sclerodactylyia and some were operated on prior to the time of diagnosis of scleroderma at the clinic.

Studies of esophageal motility were not being done at the time these patients were examined, so that the diagnosis of esophageal involvement is based on fluoroscopic findings during a barium meal. Esophageal involvement was present at the time of diagnosis in 64.5 per cent of those examined fluoroscopically. Studies of pulmonary function were not carried out on most of these patients; pulmonary involvement, occurring in 21.0 per cent, was determined, therefore, by the roentgenogram. The commonest finding was linear fibrosis in both bases, although some of the roentgenograms showed evidence of diffuse fibrosis and others demonstrated patchy, nodular fibrosis. Cardiac involvement was not easy to assess, the diagnosis being made in most cases on a combination of clinical and laboratory evidence, such as congestive heart failure without other cause, low voltage on the electrocardiogram, and evidence of decreased cardiac pulsation on fluoroscopy. Renal involvement

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of 271 Patients at Time of Diagnosis of Systemic Scleroderma</strong></td>
<td><strong>Initial Symptoms of 271 Patients with Systemic Scleroderma</strong></td>
</tr>
<tr>
<td>Age, years</td>
<td>Women</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>0 — 20</td>
<td>7</td>
</tr>
<tr>
<td>21 — 30</td>
<td>31</td>
</tr>
<tr>
<td>31 — 40</td>
<td>55</td>
</tr>
<tr>
<td>41 — 50</td>
<td>51</td>
</tr>
<tr>
<td>51 — 60</td>
<td>40</td>
</tr>
<tr>
<td>61 or more</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>199</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Average age</td>
<td>41.9 years</td>
</tr>
</tbody>
</table>

Both sexes

*Many patients described this as "swelling" of the hands.

0.1089

Circulation, Volume XXI, June 1960
Involvement and Complications at Time of Diagnosis of Systemic Scleroderma in 271 Patients

<table>
<thead>
<tr>
<th>Involvement or complication</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutaneous:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trophic changes</td>
<td>108</td>
<td>39.9</td>
</tr>
<tr>
<td>Hyperpigmentation</td>
<td>122</td>
<td>45.0</td>
</tr>
<tr>
<td>Calcinosis cutis</td>
<td>27</td>
<td>10.0</td>
</tr>
<tr>
<td>Amputation of digit</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Visceral:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esophagus</td>
<td>136</td>
<td>64.5*</td>
</tr>
<tr>
<td>Lungs</td>
<td>57</td>
<td>21.0</td>
</tr>
<tr>
<td>Heart</td>
<td>27</td>
<td>8.9</td>
</tr>
<tr>
<td>Kidneys</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Stomach†</td>
<td>7</td>
<td>—</td>
</tr>
<tr>
<td>Duodenum‡</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Small bowel†</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodontal membrane</td>
<td>49</td>
<td>36.0‡</td>
</tr>
<tr>
<td>Hypertension</td>
<td>10</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*Based on 211 patients who had fluoroscopic examinations.
†Barium studies were made infrequently and only when they were indicated by symptoms.
‡Based on 136 patients who had dental x-rays.

was even more difficult to evaluate and was based on the following criteria: elevation of blood urea and albuminurics with or without microhematuria, cylindruria, and hypertension. Renal involvement was found in only 4 cases. Surprisingly few patients had demonstrable evidence of involvement of the gastrointestinal tract below the esophagus, but roentgenographic examinations of the small bowel and colon were done only when symptoms were present. No instances of involvement of the colon or steatorrhea were found; this again reflects the paucity of symptoms referable to the lower part of the gastrointestinal tract. Sclerodermatous thickening of the periodontal membrane was described by Stafne and Austin and was detected by widening of the periodontal space on roentgenograms. Only 10 patients were hypertensive (blood pressure of more than 160 mm. Hg systolic and 100 mm. diastolic). Included were 2 of the 4 patients with renal involvement. Most patients had low normal blood pressure.

Anemia was considered to be present if the concentration of hemoglobin was less than 11 Gm. per 100 ml. of blood in women or 12 Gm. in men. Only 30 patients (11.1 per cent) were anemic by these criteria, and the anemia was usually mild. The sedimentation rate of erythrocytes was measured in 223 patients and was more than 20 mm. in 1 hour (Westergren) in 165 (73.9 per cent); 68 (30.5 per cent) had sedimentation rates of more than 50 mm. in 1 hour, and 9 had rates of 100 mm. or more. These findings were not necessarily related to other complications such as gangrene or infected cutaneous ulcers in which an elevation might be expected.

All possible combinations of degree and extent of involvement of the skin were encountered. Although the diagnosis of generalized progressive scleroderma was made not infrequently, the typical clinical pattern of this disease as described by O'Leary and Waisman was only rarely observed.

Follow-up Information

Letters of inquiry were sent to the patients who had not been examined at the Mayo Clinic since 1957. They were asked to answer a questionnaire concerning their general health, ability to work, and whether the process seemed to them to be worse, better, or the same. Follow-up information for periods of at least 5 years from time of diagnosis or until death was obtained in 236 cases (87.1 per cent). One hundred fifteen (48.7 per cent) of these patients were dead and 121 (51.3 per cent) were living.

The duration of follow-up for the 121 living patients varied from a minimum of 5 years for 7 to a maximum of 13 years for 6 patients, the average being 103.8 months from the time of original diagnosis. Forty-two patients stated that they were improved since the diagnosis was first made, 43 were worse, and 36 were about the same. These data are difficult to evaluate, since they usually represent the subjective impression by the patient. The average interval between diagnosis and death of the 115 patients who died was 41.2 months. The average age at time of death was 48.3 years; that of the men was somewhat greater than that for women (table 4).

Circulation, Volume XXI, June 1960
An attempt was made to ascertain the specific causes of death in these 115 patients by corresponding with family physicians, local hospitals, or relatives when death did not occur while the patient was at the clinic. Scleroderma was responsible for death in 65 of the 83 patients for whom such information was available (table 5). This was confirmed by postmortem examination in 17 cases. Congestive heart failure, pneumonia, and fulminating renal insufficiency with hypertension were the most frequent terminal events among patients who died of scleroderma.

The case records were studied to uncover any factors in the clinical course of prognostic value. The findings for the 115 patients who died (84 women and 31 men) were compared to those for the 121 patients (88 women and 33 men) who were living and on whom follow-up information was available. The initial symptoms (table 6), the ages at time of diagnosis (table 7), the extent of involvement and complications when first seen at the clinic (table 8), and the sedimentation rates of erythrocytes (table 9) were compared for the 2 groups. Twenty-two of the dead patients (19.1 per cent) had never had Raynaud’s phenomenon as compared to 25 (20.6 per cent) of the survivors. Five of the dead patients and 4 of the survivors had been hypertensive at the time of original diagnosis. Nineteen of the dead patients had been anemic by the standards described previously as compared with 7 of the surviving group.

Of 22 patients who had minimal cutaneous involvement in sites other than the hands and fingers at the time of diagnosis, 5 died. Of 52 patients in whom the sclerodermatous process had spread rapidly to involve rather large areas of the body within 1 year after onset of symptoms, 31 died. Some of this group were considered by the consulting physicians to have “generalized progressive scleroderma” instead of acrosclerosis. In most of the cases, however, the chief distinction clinically was the accelerated course of the disease.

**Discussion**

Generalized scleroderma has been classified as one of the systemic collagen diseases. In addition to the skin it may involve the esophagus and less often other parts of the gastrointestinal tract, lungs, heart, and kidneys. The division on a clinical basis of systemic scleroderma into acrosclerosis and generalized progressive scleroderma as proposed by O’Leary

### Table 4

<table>
<thead>
<tr>
<th>Age, years</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 — 20</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
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<td>21 — 30</td>
<td>8</td>
<td>4</td>
<td>22</td>
<td>9.5</td>
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<td>31 — 40</td>
<td>22</td>
<td>3</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>41 — 50</td>
<td>18</td>
<td>7</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>51 — 60</td>
<td>19</td>
<td>9</td>
<td>22.6</td>
<td></td>
</tr>
<tr>
<td>61 or more</td>
<td>16</td>
<td>8</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>31</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Average age</td>
<td>47.1 years</td>
<td>51.6 years</td>
<td></td>
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</table>

### Table 5

<table>
<thead>
<tr>
<th>Cause</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scleroderma (verified at necropsy)</td>
<td>17</td>
</tr>
<tr>
<td>Terminal events:</td>
<td></td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>6</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>5</td>
</tr>
<tr>
<td>Cerebral hemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>1</td>
</tr>
<tr>
<td>Renal failure</td>
<td>1</td>
</tr>
<tr>
<td>Uncertain</td>
<td>3</td>
</tr>
<tr>
<td>Probable scleroderma (no necropsy)</td>
<td>48</td>
</tr>
<tr>
<td>Terminal events:</td>
<td></td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>9</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>3</td>
</tr>
<tr>
<td>Renal failure</td>
<td>5</td>
</tr>
<tr>
<td>Hypertension with heart failure or cerebrovascular accident</td>
<td>2</td>
</tr>
<tr>
<td>Mesenteric thrombosis</td>
<td>1</td>
</tr>
<tr>
<td>Infection</td>
<td>1</td>
</tr>
<tr>
<td>Uncertain</td>
<td>27</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
</tr>
<tr>
<td>Heart disease</td>
<td>6</td>
</tr>
<tr>
<td>Malignant lesion</td>
<td>6</td>
</tr>
<tr>
<td>Hepatic disease</td>
<td>2</td>
</tr>
<tr>
<td>Postoperative</td>
<td>2</td>
</tr>
<tr>
<td>Cerebrovascular accident</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>32</td>
</tr>
</tbody>
</table>
and Waisman has not been readily accepted by other authors.

Early symptoms of generalized scleroderma in reported series frequently include swelling and stiffness of the hands and Raynaud’s phenomenon. The latter may be present for some time without other evidence of scleroderma. Orabona and Albano emphasized the presence of low-grade intermittent fever as an early finding and also described a sprue-like syndrome. Neither was observed in our series. Three clinical phases are described frequently: edematous phase, indurative phase, and atrophic phase. In our experience the clinical course was not so well defined as this classification would indicate.

In recent years many reports have dealt with the various systemic manifestations of scleroderma and various aspects of cardiac, pulmonary, renal, and gastrointestinal involvement have been covered, emphasizing the protean aspects of this disease.

The course of the disease has been considered to be variable and marked by remissions and exacerbations. In a study of more than 150 cases, Leinwand and co-workers in 1954 said that the disease followed no specific course, but complete resolution was rare. They emphasized that dyspnea and renal involvement with hypertension were bad prognostic signs and thought that Raynaud’s phenomenon made no difference in prognosis. Of their 150 patients, 22 were dead but length of follow-up was not given. Orabona and Albano said that the disease progressed in waves and that the onset of visceral involvement was a bad sign with death occurring “in some years.” The duration of the disease was shorter in women in their group, and they listed the major causes of death as congestive heart failure, renal insufficiency, and pulmonary insufficiency. Talbott and Ferrandis also discussed the variable course and stated, “The disease may persevere for a decade or longer” or the patient may die in less than a year. Patients dying rapidly, in their experience, did so of cardiac or renal failure, and those who lived longer generally died of pulmonary complications or malnutrition. Beigeman and associates reviewed 15 cases of scleroderma in which 5 deaths occurred. They agreed that Raynaud’s phenomenon was of no prognostic significance. Rothman and Walker stated, “The course in most cases is eminently chronic and extends over a period of many years.” Piper and Helwig reviewed the case material from 31 necropsies from the Armed Forces Institute of Pathology in 1955 and were unable to find any correlation between symptoms and prognosis. Seventeen of their patients had Raynaud’s phenomenon, but only 5 had it as the first symptom. They stated that the earliest symptoms were referable to the joints and

<table>
<thead>
<tr>
<th>Table 6</th>
<th>Initial Symptoms of Scleroderma of 121 Living Patients and 115 Patients Who Subsequently Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial symptom</td>
<td>Living patients</td>
</tr>
<tr>
<td>Raynaud’s phenomenon</td>
<td>Number</td>
</tr>
<tr>
<td>Scleroderma of the hands</td>
<td>40</td>
</tr>
<tr>
<td>Scleroderma of extremities or face but not of hands</td>
<td>58</td>
</tr>
<tr>
<td>Scleroderma of trunk</td>
<td>110</td>
</tr>
<tr>
<td>Generalized joint stiffness</td>
<td>30</td>
</tr>
<tr>
<td>Trophic changes</td>
<td>5</td>
</tr>
<tr>
<td>Pigmentation</td>
<td>2</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>2</td>
</tr>
<tr>
<td>Dyspnea</td>
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<td>Total</td>
<td>121</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Age at Time of Diagnosis of Scleroderma of 121 Living Patients and 115 Patients Who Subsequently Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>Living patients</td>
</tr>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>0 — 20</td>
<td>7</td>
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<tr>
<td>21 — 30</td>
<td>21</td>
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<tr>
<td>31 — 40</td>
<td>38</td>
</tr>
<tr>
<td>41 — 50</td>
<td>22</td>
</tr>
<tr>
<td>51 — 60</td>
<td>29</td>
</tr>
<tr>
<td>61 or more</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
</tr>
</tbody>
</table>
Pathologically they found involvement of the skin in all 31 cases, cardiac and pulmonary involvement in 90 per cent, renal in 74 per cent, and gastrointestinal involvement in 64 per cent. They reviewed the postmortem findings in 27 cases of circumscribed scleroderma and found no visceral involvement.

Our study of 271 patients indicates that the prognosis in scleroderma is not so favorable as is generally believed; 115 (48.7 per cent) of the 236 patients for whom follow-up information was obtained were dead. Determining the prognosis for the individual patient was difficult. The presence or absence of Raynaud's phenomenon did not seem to be related to prognosis. Likewise sex and mode of onset of the disease bore no relation to the course of the disease. Pulmonary involvement as well as involvement of the periodontal membrane and presence of calcinosis and trophic changes were unreliable prognostic signs. The mortality rate was somewhat higher for those patients who had esophageal involvement or hyperpigmentation at time of diagnosis.

The most significant findings in our series of patients with regard to predicting a poor prognosis were presence of cardiac involvement, renal involvement, anemia, and erythrocyte sedimentation rate of more than 50 mm. in 1 hour (Westergren method).

The causes of death in our series generally conformed to those reported by other authors. The leading contributing cause was congestive heart failure. Pneumonia and various pulmonary complications were next most common, followed by renal failure. Several of the patients succumbed to rapidly fulminating renal failure associated with malignant hypertension.

Finally, it is apparent from this study that the classification of systemic scleroderma into acrosclerosis and generalized progressive scleroderma is an artificial one and has no clinical or prognostic value.

Although the prognosis is better for patients with slowly progressing disease and minimal cutaneous involvement in sites other than the hands than for those with fulminating disease in which the sclerodermatous process spreads rapidly to involve large cutaneous areas of the body, one is hardly justified in separating these two extremes into separate entities on this basis alone. In most cases the course of the disease does not fall into either of these two

---

**Table 8**

Involvement and Complications at Time of Diagnosis of Scleroderma of 121 Living Patients and 115 Patients Who Subsequently Died

<table>
<thead>
<tr>
<th>Involvement or complication</th>
<th>Living patients</th>
<th>Dead patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutaneous:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trophic changes</td>
<td>46</td>
<td>45 39.1</td>
</tr>
<tr>
<td>Hyperpigmentation</td>
<td>50</td>
<td>62 53.9</td>
</tr>
<tr>
<td>Calcineus cutis</td>
<td>11</td>
<td>9 1 9.6</td>
</tr>
<tr>
<td>Amputation of digit</td>
<td>2</td>
<td>1.7 2 1.7</td>
</tr>
</tbody>
</table>

| Visceral:                   |                 |              |
| Esophagus                   | 56              | 63 69.2†     |
| Lungs                       | 24              | 24 20.9      |
| Heart                       | 7               | 16 13.9      |
| Kidneys                     | 0               | 4 3.5        |
| Stomach†                    | 5               | 1            |
| Duodenum‡                   | 1               | 1            |
| Small bowel†                | 1               | 2            |

| Miscellaneous:              |                 |              |
| Periodontal membrane        | 22              | 21 38.2†     |
| Hypertension                | 4               | 3 3.3        |

*Based on 94 patients who had fluoroscopic examinations of esophagus.
†Based on 91 patients who had fluoroscopic examinations of esophagus.
‡Barium studies were made infrequently and only when indicated by symptoms.
§Based on 63 patients who had dental x-rays.
¶Based on 55 patients who had dental x-rays.

---

**Table 9**

Sedimentation Rates of Erythrocytes at Time of Diagnosis of Scleroderma for 99 Living Patients and 97 Patients Who Subsequently Died

<table>
<thead>
<tr>
<th>Sedimentation rate (Westergren), mm. in 1 hour</th>
<th>Living patients</th>
<th>Dead patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>33 33.3</td>
<td>18 18.6</td>
</tr>
<tr>
<td>21 - 50</td>
<td>49 49.5</td>
<td>39 40.2</td>
</tr>
<tr>
<td>51 - 99</td>
<td>17 17.2</td>
<td>32 33.0</td>
</tr>
<tr>
<td>100 or more</td>
<td>0</td>
<td>8 8.2</td>
</tr>
<tr>
<td>Total</td>
<td>99 100.0</td>
<td>97 100.0</td>
</tr>
</tbody>
</table>
categories. Since the rapidity of progression of the disease seems to be the only distinguishing feature, it would be less confusing to designate systemic scleroderma as acute, subacute, or chronic and to omit other types of classification.

Summary

Two hundred seventy-one patients with unequivocal systemic scleroderma for whom the diagnosis was first established at the Mayo Clinic between January 1, 1945, and December 31, 1952, have been studied. Follow-up information was obtained 5 to 13 years after the diagnosis at the clinic concerning 236 of these patients, 115 of whom were dead. The cases were analyzed in an effort to determine what factors had a bearing on prognosis. The following seemed to bear little relation to the ultimate prognosis: sex, mode of onset, Raynaud's phenomenon, involvement of lungs and periodontal membrane, calcinosis cutis, and trophic changes. The following were considered poor prognostic omen: cardiac or renal involvement, significant elevation of the erythrocyte sedimentation rate, and anemia.

The prognosis in systemic scleroderma was found to be worse than previous reports had indicated. This study yielded no basis for the subdivision of systemic scleroderma into acrosclerosis and generalized progressive scleroderma.

Sumario in Interlingua

Esseva studiate le casos de 271 patientes con scleroderma systemique inequivoce in qui le diagnosto esseva primo establete al Clinica Mayo inter le 1 de januario 1945 e le 31 de decembre 1952. Information de controlo sequential esseva obtenite inter 5 e 13 annos post le diagnosto in le casos de 236 de ille patientes. Cunto dece-cinque habeva morite. Le casuistica esseva analysete pro determinar qual factores esseva de importancia pro le prognose. Pareva esser pauc e relacionate al ultimo resultato: sexo, modo de declaracion, phenomenon de Raynaud, affection del pulmon e del membrana periodontal, calcinosis del pelle, e alterationes trophie. Esseva de mal auguro: affection cardiac o renal, acceleration significative del sedimentation erythrocyte, e anemia.

Esseva trovate que le prognose in scleroderma systemic esse pejor que lo que esseva indicate in previe reportos. Le studio forniva nulle base pro le subdivision de scleroderma systemic in acrosclerosis e generalisate scleroderma progressive.

On Cardiac Murmurs
By Austin Flint, M.D.

The mitral direct murmur is produced by the mitral direct current of blood forced by the auricular contractions through a contracted or roughened mitral orifice. Hence, the facts just stated with regard to the current, apply to the murmur. The murmur occurs just before the ventricular systole or the first sound of the heart; it continues up to the occurrence of the first sound, and instantly ceases when the first sound is heard. It is not strictly correct to call this a diastolic murmur; it does not accompany the second or diastolic sound of the heart.—Am. J. M. Sc. n.s. 44: 29, 1862.