Laryngology Seminar

Laryngeal tuberculosis
95-10-25
R3 李建林
Introduction

• Preantibiotic era: laryngeal TB affecting 35% to 83% of patients with TB; the mortality rate was 45% to 90% (harbinger of death)

• Development of antituberculous medications, laryngeal TB affecting less than 1% of patients with TB; the mortality rate was less than 2%
• Peak incidence:
  Past: 20-30 years of age (Agwarl et al. 1951)
  Recent: 40-50 years of age (Lim JY et al. 2006)
• Risk factor:
  Immunosuppressive diseases or treatments
  Elderly people
  Immigrants from high risk area
Reasons for increasing laryngeal TB incidence:

• The wide epidemic spread of HIV worldwide (concomitant HIV infection: 25% of patients with laryngeal TB)

• Bad living and nutritional condition

• Mycobacterial strains with rising resistance to the most available chemotherapeutic agents
Mechanism

• Primary laryngeal TB
• Secondary laryngeal TB
Mechanism

• Primary laryngeal TB: TB infection of the larynx is present but pulmonary involvement is not.
• Hematogenous dissemination can seed the larynx.
• Lymphatic drainage to the larynx can seed the larynx.
• Incidence:
  Shin et al. (2000): 40.6% laryngeal TB with normal lung
  Lim JY et al. (2006): 33.3% laryngeal TB with inactive lung status
Mechanism

• Secondary laryngeal TB:
• Advanced pulmonary disease, usually cavitating, in which the larynx is inoculated by infected sputum. In this instance, the infection involves the mucosa of the intrinsic larynx, and it usually remains intralaryngeal, mainly around the vocal cords.
• The lesions are ulcerative and granulomatous.
Symptoms

• In the past (constitutional symptoms):
  • fever
  • Weight loss
  • Night sweating
  • Fatigue
  • Hemoptysis

• Today:
  • Hoarseness (most common)
  • Odynophagia
  • Dysphagia
Clinical approach

- Complete history
- Laryngoscopy → highly suspicious TB
- CXR
- Sputum collected for AFB
- Laryngeal biopsy
Clinical approach

Fig. 1 Laryngoscopic findings of laryngeal tuberculosis; a ulcerative (on whole larynx), b granulomatous (on posterior glottis), c polypoid (on right false vocal cord), d nonspecific (on right true vocal cord)
Clinical approach

Fig. 1. Whitish ulcerative lesion of both true vocal cords was observed in 49-year-old man.

Fig. 2. Swollen mucosa of the right-side true vocal cord was observed in 57-year-old man.
Clinical approach

<table>
<thead>
<tr>
<th>Laryngoscopic findings</th>
<th>Single vs. multiple</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single lesions</td>
<td>Multiple lesions</td>
<td>Total (%)</td>
</tr>
<tr>
<td>Types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulcerative</td>
<td>3</td>
<td>8</td>
<td>11 (18.3)</td>
</tr>
<tr>
<td>Granulomatous</td>
<td>14</td>
<td>8</td>
<td>22 (36.7)</td>
</tr>
<tr>
<td>Polypoid</td>
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<td>4</td>
<td>16 (26.7)</td>
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<tr>
<td>Nonspecific</td>
<td>8</td>
<td>3</td>
<td>11 (18.3)</td>
</tr>
<tr>
<td>Total</td>
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<td>23</td>
<td>60</td>
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<tr>
<td>Tuberculous lesions</td>
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</tr>
<tr>
<td>TVC</td>
<td>28</td>
<td>18</td>
<td>46</td>
</tr>
<tr>
<td>FVC</td>
<td>3</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Epiglottis</td>
<td>1</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Arytenoids</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>P-comm</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>56</td>
<td>93</td>
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</tbody>
</table>

*TVC* true vocal cord, *FVC* false vocal cord, *P-comm* posterior commissure
<table>
<thead>
<tr>
<th>Laryngoscopic findings</th>
<th>Lung status</th>
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<tr>
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<td>Single vs. multiple</td>
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<td>Single</td>
<td>13</td>
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<tr>
<td>Multiple</td>
<td>15</td>
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<tr>
<td>Types</td>
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<tr>
<td>Ulcerative</td>
<td>6</td>
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<td>Granulomatous</td>
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<td>Polypoid</td>
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<td>Tuberculous lesions</td>
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<tr>
<td>TVC</td>
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<td>Epiglottis</td>
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<tr>
<td>Arytenoids</td>
<td>6</td>
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<tr>
<td>P-comm</td>
<td>7</td>
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<tr>
<td>Total</td>
<td>48</td>
</tr>
</tbody>
</table>

*TVC* true vocal cord, *FVC* false vocal cord, *P-comm* posterior commissure
Common site of laryngeal TB

- Past:
  Sited mainly in the posterior half of larynx (posterior comissure) due to pooling of the infected sputum
- Recent:
  - True vocal cord (maybe unilateral)
  - Epiglottis
  - False vocal cord
  - Arytenoid / interarytenoid area
  - Subglottis
• Laryngeal TB: nonspecific and single → less chance of pulmonary TB
• Hematogenous or lymphatic spread → anterior larynx and epiglottis
• Laryngeal TB: ulcerative or granulomatous and multiple → greater chance of pulmonary TB
• Direct bronchogenic spread → post. portion of larynx
Histopathology

- Granuloma formation of epitheloid cells
- Langhans’ giant cells
- Caseation fibrosis
- Lymphocytic infiltration
- AFS bacilli
Fig. 2. Multiple epitheloid granulomas (g) beneath surface epithelium of the larynx. Arrow indicates Langhans’ giant cells (H&E × 200).
Histopathology

Acid fast stain bacilli
Treatment

• Pulmonary tuberculosis
• Extrapulmonary tuberculosis
Pulmonary tuberculosis

• Drugs of choice for New case
  – 1. Standard regimen: (total 6 months)
    • INH+RIF+EMB+PZA for 2 months,
    • Then INH+RIF+EMB for 4 months
  – 2. Fixed-dose combinations: (total 6 months)
    • Rifater+EMB for 2 months
    • Then Rifinah+EMB for 4 months

• cavitations on initial chest X ray
  and/or positive cultures at completion of initial 2 months’ treatment,
  → extend treatment to total 9 months.

Guidelines for chemotherapy of tuberculosis in Taiwan
Extrapulmonary tuberculosis

- INH+RIF+EMB+PZA for 2 months
- then
- INH+RIF+EMB for 4 months
  (total 6 months)

Guidelines for chemotherapy of tuberculosis in Taiwan
# Treatment

<table>
<thead>
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<th>Treatment category</th>
<th>Intensive phase (daily or three times a week)</th>
<th>Continuation phase</th>
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<tbody>
<tr>
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<td>6HE</td>
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<td>4HR</td>
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<td>4H₁R₂</td>
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<td>2H₃R₂Z₁</td>
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<tr>
<td></td>
<td></td>
<td>4H₁R₂</td>
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</tbody>
</table>

EPTB, extrapulmonary tuberculosis; R, rifampicin; H, isoniazid; Z, pyrazinamide; E, ethambutol; S, streptomycin
The number before the letters refers to the number of months of treatment. The subscript refers to the number of doses per week. Some authorities advocate a seven-month continuation phase with daily isoniazid and rifampicin (7HR) for category I patients with tuberculosis meningitis, military tuberculosis and spinal tuberculosis with neurological signs
Adapted from reference 4
Sequela of laryngeal TB

- Posterior glottic stenosis
- Subglottic stenosis
- Vocal cord paralysis when cricoarytenoid joint or recurrent laryngeal nerve was invaded
- Persistent dysphonia
Differential diagnosis

• Neoplasms
• Sarcoidosis: rich in lymphatics, sparing the vocal cords
• Wegener’s granulomatosis: usually in subglottis + pulmonary infiltration + rhinologic and renal disease
• Mycotic infections
• Syphilis
• Chronic nonspecific laryngitis
Conclusion

• There can be laryngeal tuberculosis without any pulmonary involvement and seem to manifest as nonspecific, polypoid, single lesion.

• The successful management of patient with laryngeal TB relies on clinical suspicion, prompt diagnosis and appropriate antituberculous therapy.
Reference