Unsuspected Bronchogenic Carcinoma*

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Reported here is an analysis of 32 cases of bronchogenic carcinoma treated for various diseases in which the correct diagnosis was never seriously considered before death. Thus, during the past 10 years the correct diagnosis has not been suspected in 5 per cent of the 650 cases of primary carcinoma of the lung treated on this Thoracic Surgery Section. Kennedy Hospital's 150,000 admissions had a proved bronchogenic carcinoma incidence of 4 per thousand. Histologic proof of diagnosis while undergoing treatment was obtained in 91 per cent of cases by either biopsy or resection. Some patients had obvious clinical cancer and were given some form of therapy, but histological proof of the diagnosis was established only by autopsy. A few patients were treated for cancer on the basis of clinical findings, but tissue diagnosis was never obtained. These cases are not included in our lung cancer register.

The presenting complaints of patients with unsuspected lung cancer were extremely variable (Fig. 1). So impressive has this been that bronchogenic carcinoma appears to have replaced syphilis as the great masquerader. Joint pain (48 per cent) was the most common single presenting complaint, usually involving the shoulder, low back or hip. Neurological symptoms (coma, sphasia, hemiparesis, paraplegia or facial nerve paralysis) were present in 13 of these 32 patients. Gastrointestinal symptoms were present

PRESENTING COMPLAINTS
(42 pts.)

<table>
<thead>
<tr>
<th>Complaint</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Joint Pain</td>
<td>16</td>
</tr>
<tr>
<td>Neurologic Symptoms</td>
<td>13</td>
</tr>
<tr>
<td>G.I. Symptoms</td>
<td>11</td>
</tr>
<tr>
<td>Respiratory Symptoms</td>
<td>2</td>
</tr>
</tbody>
</table>

FIGURE 1

*From the Thoracic Surgical Section, Veterans Administration Hospital. Presented before the Annual Meeting of the Southern Chapter, American College of Chest Physicians, Miami, Florida, 1958.
in 11. Only two, both with dyspnea and fever, gave presenting complaints arising primarily from the respiratory system. There was a history of bronchitis or asthma for many years in 20 per cent of the cases. Two were admitted following falls, one resulting in paraplegia, the other in knee pain. Most of the 32 had had one or more previous admissions which offered opportunity for diagnostic study, had the possibility of bronchogenic carcinoma been entertained.

Physical findings were usually not suggestive of pulmonary cancer. Some chest abnormality on physical examination was found in only eight. One was thought to have typical acute lobar pneumonia and Type 17 pneumococcus was isolated from the sputum. There was neurological deficits in 13 patients, slightly more than half of these were due to cord compression. Two had paralysis of the facial nerve. Three had craniotomy for brain tumors. Another was diagnosed as having typical cardiovascular accident.

Completely negative routine chest x-ray films were obtained from six patients (Fig. 2). A soft infiltrate interpreted as tuberculosis or pneumonitis was the roentgenographic finding in 13, and five of these shadows cleared during hospitalization. Bullous emphysema, usually bilateral, with no apparent density, was found in five roentgenographic studies. Three patients had hilar prominences; two had well-defined cavities in the upper lobes and two had atelectasis. One showed an aneurysm of the aorta and another pleural effusion which occurred with proved pulmonary and pericardial tuberculosis. Osteolytic lesions of the spine were demonstrated in eight. All areas of the spine seemed to be about equally involved.

In the three who had bronchoscopy, no abnormality was found. The most common clinical diagnosis was tuberculosis, 15 of the patients having had either proved or suspected tuberculosis and 10 having had positive sputa for acid fast bacilli on the last hospital admission. In one of these,

X-RAY FINDINGS
(32 pts.)

<table>
<thead>
<tr>
<th>CLEARED 5</th>
<th>PERSISTED 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOFT PULMONARY INFILTRATE</td>
<td>8</td>
</tr>
<tr>
<td>OSTEOLYTIC LESIONS OF SPINE</td>
<td>6</td>
</tr>
<tr>
<td>&quot;NEGATIVE&quot; CHEST X-RAY</td>
<td>5</td>
</tr>
<tr>
<td>BULLOUS EMPHYSEMA</td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 2
no evidence of tuberculosis was found at autopsy. Five of the cases were
diagnosed as spinal cord tumors.

Five were under 35 years of age, but the mean age was 53 years. Twenty
of the tumors were anaplastic carcinoma; six were squamous and six were
adenocarcinoma.

*From onset of symptoms to death* the time varied from one day for a
patient with massive gastrointestinal hemorrhage to five years in one with
carcinoma and far-advanced pulmonary tuberculosis who died from coro-
nary occlusion. The mean survival time was 8.1 months from onset of
symptoms to death, with no patients living after five years compared with
our resected cases, which had a five-year “cure” rate of 31 per cent.

Half of the tumors occurred in the right upper lobe. There was involve-
ment of the liver in half of all cases. The brain was involved in eight;
bone in 13, adrenal in 13; the heart, spleen, gastrointestinal tract, kidney,
thyroid and skin were involved in one or more cases. There was no differ-
ence in site or incidence of metastasis between the various histologic types
of tumors.

It would appear that the frequency of missed diagnoses would fall as we
gain more experience and see more cases. This is not the case. A third of
these errors were made last year. One of the tumors was so elusive that
although there were metastases to skull, spine, liver and supraclavicular
nodes, the primary tumor in an area of pneumonia was not even noticed on
gross examination at autopsy.

Two patients, who died of pneumonia and mesenteric thrombosis, had
well-localized tumors without metastasis which could otherwise have been
easily removed at surgery with a reasonable probability of cure.

Seventy-five per cent of these patients had either pulmonary tuberculosis
or neurological symptoms. Bronchogenic carcinoma metastasizes to the
brain in about 25 to 50 per cent of reported cases. The overall picture
shows that from 16 to 38 per cent of metastatic brain tumors are broncho-
genic in origin. However, it seems that bronchogenic carcinoma is the
most common primary site of metastatic brain lesions in males over 35
years of age. In a given case with a brain tumor and pulmonary infiltrate
the chances are about even that bronchogenic carcinoma is the correct
diagnosis. Patients with tuberculosis or emphysema may have an increase
in the incidence of cancer over patients with a normal respiratory system.

We would recommend that any patient with signs and symptoms of
spinal or brain compression have at least a posteroanterior and both
oblique x-ray films of the chest and multiple sputa specimens studied
cytologically. If any of these studies are in the least abnormal (including
areas of emphysema) more complete pulmonary studies, including bron-
choscopy and planigrams, should be done to rule out bronchogenic car-
cinoma.

We are convinced that any man with joint pain of unknown etiology,
particularly if multiple and involving the shoulders, back or hip, should
have an adequate study of his lungs to rule out cancer.

Elderly male smokers with longstanding pulmonary tuberculosis should
be studied carefully from time to time ascertain the development of cancer.
UNsuspected Bronchogenic Carcinoma

SUMMARY

1. This is a report of 32 cases of bronchogenic carcinoma in which the correct diagnosis was never seriously considered before death. These errors occurred in 650 cases of bronchogenic carcinoma from among about 150,000 admissions.

2. The presenting complaints were extremely variable. Joint pain, neurological and gastrointestinal symptoms were present in most cases. Respiratory symptoms were the presenting complaints in only two.

3. Physical findings revealed neurological deficits in 13 and eight had abnormality on examination of the chest.

4. Negative chest x-ray films were obtained from six. Soft infiltrations suggestive of tuberculosis or pneumonia were present in 13; five of these shadows disappeared during hospitalization. Bullous emphysema was the next most common finding on x-ray film.

5. Half of the patients were considered to have tuberculosis and about a third had positive sputa.

6. Metastases were usually extensive, involving the liver, adrenal, bone, brain, heart, spleen, gastrointestinal tract, kidney, thyroid and skin.

7. Study of these errors in diagnosis indicates that spinal or brain compression, joint pain and pulmonary tuberculosis should make one cognizant of the possibility of coexisting bronchogenic carcinoma and that careful, repeated examinations should be made in patients with these conditions to prove or disprove the presence of cancer.

RESUMEN

1. Se refieren 32 casos de carcinoma bronquiogénico en los que el diagnóstico correcto nunca se consideró con seriedad antes de la muerte. Estos errores ocurrieron en 650 casos de carcinoma bronquiogénico entre 150,000 ingresos.

2. Los síntomas que hubo fueron muy variables. Dolor articular, síntomas neurológicos y gastrointestinales en la mayoría de los casos. Sólo en dos hubo síntomas respiratorios.

3. Los hallazgos físicos revelaron deficiencias neurológicas en 13 y ocho tenían anomalidades al examen del tórax.

4. Se obtuvieron películas negativas en seis. Infiltraciones blandas sugerentes de tuberculosis o neumonia en 13; cinco de estas sombras desaparecieron durante la hospitalización. El hallazgo más frecuente enseguida fue enfisema buloso a los rayos X.

5. La mitad de los enfermos se creyó que eran tuberculosos y alrededor de un tercio tuvieron exámenes positivos.

6. Las metástasis fueron generalmente extensas, comprometiendo el hígado, las suprarrenales, huesos, cerebro, corazón, bazo conducto gastrointestinal, riñón, tiroides y piel.

7. El estudio de estos errores en el diagnóstico indica que la compresión espinal o cerebral, el dolor articular y la tuberculosis pulmonar deben hacer que uno reconozca la posibilidad de carcinoma bronquiogénico coexistente y de que deben hacerse exámenes cuidadosos y repetidos en enfermos con estos padecimientos para demostrar la existencia o no de cancer.

RESUME

1. Les auteurs présentent une communication portant sur 32 cas de cancer bronchique dans lesquels le diagnostic correct ne fut jamais sérieusement considéré avant la mort. Ces erreurs survinrent dans 650 cas de cancer bronchique pour un total d'environ 150,000 admissions.

2. Les symptômes présentaient extrêmement variables. Des douleurs articulaires, des symptômes neurologiques et gastro-intestinaux existaient dans la plupart des cas. Ce n'est que dans deux cas que les malades se plaignaient de symptômes respiratoires.

3. A l'examen physique on constata dans 13 cas des signes de déficit neurologique et huit présentaient une anomalie à l'examen du thorax.

4. Les films thoraciques ne montrèrent aucune anomalie chez 6 malades. Il existait de légères infiltrations, éventratures de tuberculose ou de pneumonie dans 13 cas; cinq de ces ombres disparurent pendant l'hospitalisation. L'empyèmme bulleux fut ensuite la constatation la plus fréquente sur les films radiologiques.

5. La moitié des malades furent considérés comme ayant une tuberculose et environ un tiers avaient des expectorations positives.

6. Les métastases furent habituellement extensives, atteignant le foie, les capsules surrenales, les os, le cerveau, le cœur, la rate, l'appareil digestif, le rein, la glande thyroïde et la peau.
7. L'étude de ces erreurs de diagnostic indique que la compression de la moelle épinière ou du cerveau, les douleurs articulaires et la tuberculose pulmonaire devraient avertir le praticien de la possibilité d'un cancer bronchiques coexistant. Des examens soigneux et répétés devraient être faits chez de tels malades pour permettre de prouver ou non la présence d'un cancer.

ZUSAMMENFASSUNG

1. Es handelt sich um einen Bericht über 32 Fälle von bronchogenem Carcinom, bei denen die richtige Diagnose in keinem Fall ernstlich in Erwägung gezogen wurde vor dem Tode. Ein solcher Irrtum kam vor unter 650 Fällen von Bronchuscarcinom bei ungefähr 150 000 Einweisungen.


3. Physikalische Befunde wiesen 13 mal neurologische Mängel auf, und 8 Kranken hatten Veränderungen bei der Thoraxuntersuchung.


5. Von der Hälfte der Kranken wurde angenommen, dass sie eine Tuberkulose hatten und ungefähr ein Drittel hatte positives Sputum.


7. Die Analyse einer irrtümlichen Diagnose kennzeichnet, dass eine spinale oder cerebrale Kompression, Gelenkschmerzen und Lungentuberkulose an die Möglichkeit eines gleichzeitig bestehenden Bronchuscarcinomes denken lassen sollen, und dass sorgfältig und wiederholt untersucht werden muss bei Kranken mit solchen Erscheinungen, um das Bestehen eines Krebses zu beweisen oder auszuschliessen.

REFERENCES