Complacency in Carcinoma of the Lung*

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Complacency in the diagnosis and treatment of carcinoma of the lung seems based upon poorly understood statistical evidence that indicates an almost hopeless prognosis for the disease.

Nickson and colleagues1 in 1957 state, "Treatment of carcinoma of the lung today is, at best, a disappointment regardless of the method of treatment . . . . Thus, of all cases seen, the survival will range from 5 to 10 per cent two-year survival." Rubin7 in 1966 states, "Bronchogenic carcinoma is a fatal disease . . . . Treatment for lung cancer remains a disappointment. The favorable cases constitute 20 per cent or less of most experiences. Five-year survival constitutes less than 5 per cent of most series." Freckman and associates8 in 1966 state, "The undebated world-wide increase in bronchogenic carcinoma and the over-all dismal end results after surgery and x-ray therapy are appalling." Boucot and co-workers9 in 1965 commented, "Most patients with bronchogenic carcinoma die within the first two years after diagnosis." Many similar quotations could be given.

However, consider carefully the meaning of Sherrah-Davies:10 "The treatment of carcinoma of the lung is unrewarding because the majority of cases, when first seen, are too advanced for anything more than palliative treatment to be possible." Ochsner11 in 1956 said that when patients with carcinoma of the lung were first seen by him or his group, 46.2 per cent (inoperable) were not offered thoracic exploration; of those explored 64.8 per cent were resectable and many of these were very unfavorable. Johnson and colleagues12 in 1958 found 44 per cent of 344 patients with carcinoma of the lung (inoperable) unsuitable

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even for thoracic exploration. Of those explored, only 34 per cent were resectable. Barrett and associates13 in 1963 stated that 37.2 per cent of the patients with carcinoma of the lung were so far advanced that thoracic exploration was not offered, and of the 62.8 per cent who had thoracic exploration, only 30 per cent had the lung lesion resected. Since 1941 the author has personally examined 815 private patients with carcinoma of the lung. Before the use of routine bilateral non-palpable cervical node biopsy for patients with proved or suspected carcinoma of the lung, 50.3 per cent of the cases were considered inoperable when first seen as opposed to 56.5 per cent with the help of this technique. The resection rate of those explored has increased from 65.6 per cent to 83.3 per cent.

The statistics given above are the common findings and similar figures are reported by many other workers.14 Thus, it seems abundantly clear that the dismal results of treatment are in reality the inability to detect or recognize the disease at an early stage or at a time when treatment would perhaps be favorable. The real deficiency in treatment of carcinoma of the lung lies in the need for early diagnosis of the disease and accurate recognition of its stage of development. Improvement in both areas would materially aid the proper evaluation of treatment and indeed would significantly increase the success of treatment techniques already available.

Jenkinson and Hunter15 in 1939 stated, "... the capacity for early recognition of the disease has not kept pace with the increasing realization of its importance as a common condition," and their statement is even more pertinent today. Undoubtedly, an active and energetic campaign directed at the medical profession and the public is...
needed. The public should not allow respiratory symptoms to continue without consulting the physician. The physician should not allow pulmonary symptoms to continue in his patients without adequate investigation: every pulmonary lesion shown by the abnormal roentgenogram of the lung should be identified even if thoracic exploration is needed to accomplish a diagnosis.\textsuperscript{15,16}

In seeking early diagnosis of the disease, it must be kept constantly in mind that “There must be a period in the natural history of lung cancer when neither symptom nor roentgenographic changes are present.” In other words, the single normal chest x-ray film cannot be thought sufficient evidence to consider a suspect patient free of bronchogenic carcinoma. Se-

\textbf{FIGURE 1:} The admission roentgenogram records a rather typical x-ray appearance of bronchogenic carcinoma involving the upper lobe of the left lung. There is marked resolution one month later. At three months, the chest roentgenogram is normal; at four months, the lobar emphysema of the upper lobe of the left lung revealed the true nature of the disease. The patient was bronchosoped at the time of each chest film and not until after the film at three months was the neoplasm visible. At operation, the neoplasm was found to be squamous cell type. In general, improvement in serial chest roentgenograms does not warrant the assumption that the patient does not have lung cancer.
ritional x-ray films of the chest may present more complete evidence; minute changes may be important. Evidence available would indicate that carcinoma of the lung is a slowly progressive disease. From a large number of patients seen by the author and by colleagues, 50 patients were chosen for more careful study because a very minimal roentgenographic change was detected and because there were available serial x-ray films of the chest that were taken at various times before the tissue diagnosis was actually made. From the date of the first detectable changes in the chest roentgenogram to the time of histologic diagnosis was on an average of 10.5 months in undifferentiated carcinoma against 21.4 months in squamous cell carcinoma, the average being 18.6 months. The significance of this study is confused by the fact that a carcinoma of the lung too small to be revealed by x-ray study may be located in a position to

Figure 2: The series of chest roentgenograms reveals a slow developing bronchogenic carcinoma. It is an unusual case, and perhaps it is not typical of carcinoma of the lung. At operation, on May 23, 1964, the neoplasm was an adenocarcinoma and microscopic metastasis to mediastinal lymph nodes was found. For the first time in May, 1966 the patient reveals evidence of rib metastasis. If this patient had been given surgical treatment in 1960 surely she would have been "cured."
obstruct a bronchus or bronchiole and thus cause parenchymal changes in the lung that are readily revealed by chest roentgenogram. In these cases, another chest roentgenogram taken at a later date may appear to be normal (Fig. 1) because the obstruction to the bronchus has been relieved. Thus, it is not possible to determine the starting point of lung cancer by x-ray. In addition, if minute abnormalities are to be seriously considered, it is difficult to declare a single chest roentgenogram normal; serial x-ray films of the lungs may reveal the true significance of an abnormality. Whenever an abnormal x-ray film of the lung is found, it is of great interest and importance to obtain all previous chest x-ray films for comparison. It is surprising how often an apparently insignificant lesion can be seen on a chest roentgenogram taken one to two years earlier. Such an exercise, however, is discouraging to the physician who is concerned with early diagnosis (Fig. 2 and 3).

Since early diagnosis is a goal, then the natural history of the disease must be considered. The best opinion at present indicates that carcinoma arises from a single cell and grows by geometric progression into 2-4-8-16 cells and so on. Growth is dramatically shown in Chart 1 from Mottram. It is estimated that it takes about 30 doublings of the original cell to produce a growth 1.0 cm in diameter. A lesion must be 0.3 cm in diameter in the parenchyma of the lung in order to be visible on roentgenogram of the chest. After careful study, Garland and co-workers give the doubling time for squamous cell carcinoma of the lung as 4.2 months, while that of anaplastic carcinoma is 4.1 and adenocarcinoma 7.3 months. Spratt and associates give doubling times as follows: squamous cell 90 days, anaplastic 93 days.

![Figure 3: The chest roentgenograms reveal a barely visible abnormality on August 10, 1964. It is not difficult to demonstrate the neoplasm on May 3, 1966. At the time of surgical excision on May 13, 1966, there seemed only a minimal opportunity for survival beyond one or two years. When presented with chest roentgenogram like that of May 3, 1966, it is not unusual to find earlier evidence of the lesion if previous x-ray films are sought out. Brackin called attention to the fact that often minute changes on a chest roentgenogram can be followed to the point of histologic diagnosis if one diligently searches for past x-ray films.](image-url)
and adenocarcinoma 269 days. It is assumed that centrally located lesions would behave in the same general manner. In a small series of patients with carcinoma of the lung, the author attempted to measure and calculate doubling time and found it difficult to be accurate. In a small series, there was a large overlap in time interval of squamous cell and anaplastic carcinoma. Doubling time of the group, irrespective of cell type, was from 0.5 to 2.5 months. One patient with a doubling time of 4.8 months was observed. Based on the doubling times and the number of doublings required, it seems reasonable to believe that in many patients carcinoma of the lung is a slow-growing tumor and is present several years before it is visible on x-ray of the chest. Consider single cell origin of carcinoma of the lung and interpolate evidence presented in Chart 1. Undoubtedly, this period offers the best chance for research and study in detection and obviously would be the ideal time to institute treatment.

A peripheral lung lesion can be seen on x-ray at size 0.3 cm. It requires eight doublings to reach 0.6 cm (Chart 2). From visibility on x-ray to 1.2 cm in diameter requires about sixteen doublings, or from 8 to 32 months. These figures are frightening, since most chest x-rays of lung cancer shown in the literature and presented on first examination of patients reveal lesions of a much greater size. Thoracic surgeons should be resecting lesions that are difficult for the untrained eye to detect on roentgenograms (Fig. 4). Indeed, thoracic surgeons and internists alike should be able to report upon series of patients who have had a centrally located carcinoma removed while the chest roentgenograms were considered normal. The central lesion can be found before x-ray changes if symptoms are investigated promptly. Carcinomatous

![Image](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21452/)

**Figure 4:** The roentgenograms reveal the difficulty of presenting photographs of chest roentgenograms of bronchogenic carcinoma when the disease is found reasonably early and promptly treated. At lobectomy, the lesion was an adenocarcinoma.
lesions of less than 0.3 cm in size can be seen by bronchoscopic examination if fortuitously located. Most workers who study the problem agree that symptoms occur from centrally located lesions (lesions in main stem, lobar, or at orifice of segmental bronchus) much earlier than from peripheral lesions. The early and frequent use of the bronchoscope will be very fruitful in detecting early the central lesions.

Mass chest x-ray surveys have produced some beneficial results, but those workers who have studied the problem do not believe it is worthwhile since the yield in diagnosed cases of lung carcinoma is so low. Routine large roentgenograms of the chest on every hospitalized patient of 40 years of age or older surely is a worthwhile procedure. It is difficult to gather specific statistical evidence to prove the statement, but years of practice have convinced the author of the benefits.

There is a question whether or not cytology has been adequately employed. Undoubtedly, the chest physician and general practitioner should follow the lead of the gynecologist. In Baltimore, all women admitted to our better hospitals have a routine cytologic smear taken of the cervix, and all women who have periodic examinations by gynecologists (and by some general practitioners) have a cytologic smear of the cervix once every 6 to 12 months. As a result, deaths from carcinoma of the cervix are gradually decreasing (Chart 3).

It is impossible to do cytologic examinations on the sputum at will since production of sputum is not normal. Nevertheless, sputum cytology could be used more efficiently. Boucot and colleagues stressed the fact that more than half of the "new" cancers develop in men who have had roentgenologic evidence of former pulmonary or pleural disease. Many patients do produce some sputum, and an examination can be made. On occasion, one finds positive sputum cytology even though there is no demonstrable lesion centrally or peripherally. This creates a serious problem.

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**Chart 1:** If epitheliomatous warts arise from a single cell, a long period of their early life must be invisible; even if we take a fast-growing wart which doubles its area in a week, it will be approximately 13 weeks before it becomes visible on the skin as a wart. The growth of such a wart is shown in this chart: the upwardly concave curve AA shows the visible growth of the wart during five weeks (18th to 23rd) from a just-visible wart having an area of one square mm to one having an area of 22 square mm. On plotting the logarithms of these areas, the straight line BB in the chart is obtained (Mottram). The chart also reveals the relationship to surface area.
In the author's series of bronchogenic carcinoma from 1941 to 1957 there were, when first seen, 10.6 per cent of the patients with palpable cervical lymph nodes revealing metastatic involvement by biopsy study. From 1957 to 1965 there were 8.9 per cent with palpable cervical lymph nodes revealing metastatic disease. This indicates no real improvement in the early detection of the disease. It is obvious that early detection of cancer of the lung depends upon competent, early, and frequent use of all diagnostic techniques available.

Carcinoma of the lung is said to be on the increase (Chart 3). This is also said to be true of all carcinoma in the human. However, it is crystal clear that carcinoma of the lung has become the "whipping boy" for cases where diagnosis is difficult. An example from the author's work is a patient who had a cervical node biopsy reviewed by competent pathologists who believed the metastasis shown was typical of carcinoma of the lung. No lesion in the lung could be demonstrated by x-ray or bronchoscopy. About 18 months later the patient was found to have a very small branchial cleft carcinoma. Rosenblatt and co-workers call attention to the fact that more than one-third of all carcinomas that have their origin elsewhere metastasize to the lung. Bronchoscopic biopsy, lymph node biopsy, and resected specimens from the lung typically have been diagnosed bronchogenic carcinoma only to find later that the primary carcinoma was from the pancreas, endometrium, gallbladder, kidney, rectum, or sigmoid. The pleomorphic characteristics of the tumor are responsible. Every thoracic surgeon has had this experience. Rosenblatt et al state, "During the period of study, 81 of the cases clin-

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Chart 2: The chart reveals graphically the relationship of radius to volume. It should be noted that as the radius of a lesion doubles on x-ray film, its volume increases eightfold.
Chart 3: The chart reveals the increasing statistical death rate for lung cancer and the declining death rate for cancer of the cervix. It would appear that knowledge of "cancer in situ" has caused the declining death rate in cancer of the cervix.

Chart 4: The graph presents a striking change in the early detection and treatment of cancer of the cervix. The adaptation of a specific manner of recognizing the disease according to a pretreatment clinical stage of development undoubtedly brought about this remarkable improvement in early diagnosis. Stages 0 and 1 are curable whereas stages III and IV are not curable.
are often called lung cancer. Obviously, accurate diagnosis is as important as early detection. The latest year from which United States vital statistics have been completed is 1962, which shows that of the total of 41,376 pulmonary malignant neoplasms, 18,886 were specified as primary and 22,510 were unspecified as to primary or secondary origin. The need for more accurate and more precise diagnosis is apparent.

The best method of early detection of bronchogenic carcinoma is a high index of suspicion, a knowledge of the natural history of the disease and a resolve: "No lesion of the lung should be allowed to exist unidentified." This becomes even more imperative after 40 years of age in the male patient. Every chronic pulmonary symptom should be investigated. The goal should be treatment before symptoms develop. At present, there is no consistent or infallible method known to accomplish this goal, but the undisputable presence of carcinoma cells years before usual detection should stimulate research and development of new diagnostic techniques.

It is only logical to ask if earlier recognition of carcinoma of the lung would result in improved effectiveness of surgical or other treatment. Davis, Peabody and Katz wrote in 1956, "Our findings indicate that the small solitary circumscribed asymptomatic bronchial carcinoma recently detected on a fortuitous chest x-ray has a 75 per cent chance of surviving five years if operated upon promptly." The same group reaffirmed this in 1961 revealing 66 per cent of such a group survived five years or longer; Peabody verifies this in 1966, revealing that 63 per cent of 58 patients with asymptomatic carcinomatous pulmonary nodules are alive and free of carcinoma five years or longer. Hughes and associates state that in carefully selected patients, surgical resection can be expected to give a 30 per cent five-year survival. The rapidity of growth (doubling time), the virulence of the neoplasm, or the resistance of the patient may be more significant criteria than early diagnosis or treatment when talking in generalities; however, for the particular person with a carcinoma there is no doubt that the earlier the treatment the longer will be the survival time. The carcinoma of the lung that becomes hopelessly inoperable in five months from the first roentgenographic appearance probably will not be saved regardless of how early it is treated; however, the patient who still has an operable carcinoma of the lung 24 months after its first appearance on chest x-ray film undoubtedly would be cured if resected when first seen. In any case, earlier recognition of the disease should improve the survival time.

There have been many studies attempting to find favorable and unfavorable factors concerned in carcinoma of the lung. It is generally agreed that the anaplastic cell type has a very unfavorable prognosis. Its natural course is shorter and metastasis occurs quicker. Weiss describes "... 32 cases of proved lung cancer with a 70 mm photofluorogram six months prior to the film on which the cancer was first recognized, and 31 cases in which the film interval exceeded 12 months. The three-year survival rate was 19 per cent in the first group and 0 per cent in the second group. The slower growing carcinoma of the lung is generally thought to have the best prognosis. Blood vessel invasion, lymph node metastasis and spread beyond the confines of the lung are all unfavorable characteristics; whereas, slow growth, absence of symptoms, small size of tumor, absence of blood vessel invasion, absence of lymph node metastasis and highly differentiated cell type are all favorable factors. Yet, in most series, there are exceptions mentioned to all these factors.

In spite of all the excellent studies on the treatment of carcinoma of the lung, it is difficult to make it statistically favorable except under unusual circumstances, as indicated above. It seems that the thoracic surgeon and the radiation therapist should seriously consider the methods used by the gynecologists who pinpoint their efforts at
therapy by establishing a pretreatment stage classification based upon clinical findings and not upon histologic study of the surgical specimen after it is removed. Their classification was adopted by the League of Nations in 1929, revised in 1937, and in 1950 adopted by the American Gynecological Society, by the American Association of Obstetrics, Gynecology and Abdominal Surgeons, by the Section of Obstetrics and Gynecology of the American Medical Association, and by the World Health Organization. The cervical cancer was classified into stages 1 to 4 inclusive, and stage 0 added as carcinoma in situ was understood.\textsuperscript{44} Stage 1 was most favorable and stage 4 very unfavorable. Stage 0 is curable. Williams\textsuperscript{45} in 1961 states, "... It will be noted, strangely enough, that 8 per cent of stage 0 (cancer in situ) cases were diagnosed clinically. This seems an impossibility, for by definition, stage 0 carcinoma of the cervix is a microscopic diagnosis.... Five year survival rates for carcinoma of the cervix have shown a gradual improvement. However, when these figures are evaluated and the rate corrected for the stage of carcinoma, the improvement is related almost entirely to early diagnosis." Chart 1\textsuperscript{45} reveals what can be accomplished by the use of a pretreatment clinical stage classification. It is sorely needed in carcinoma of the lung (Chart 3).

A clinical staging classification of lung carcinoma was recommended by Nickson et al\textsuperscript{46} in 1957 and revised in 1966\textsuperscript{47} and also recommended by Rubin.\textsuperscript{9} Those who have studied carcinoma of the lung can easily understand the need for such a clinical staging classification. Based upon an experience with 815 cases of carcinoma of the lung personally studied and treated, the author suggests certain modifications of the Cliff ton\textsuperscript{14} classification. Undoubtedly, a clinical staging classification will be difficult for all workers to accept without modifications. It seems that only a critical, qualified, dedicated committee made up of members from several thoracic societies interested in the disease can create an acceptable classification that can be adopted by the respective thoracic societies. Nevertheless, the author will attempt to modify the excellent clinical classification of Cliff ton\textsuperscript{14} with the hope that it will stimulate activity and study (Chart 5).

A detailed analysis of the chart showing the stages and a careful discussion of the merits of each statement seems superfluous at this time. Whether or not more or fewer criteria should be used is worthy of study. For example, it is obvious that whether or not an oat-cell (anaplastic) tumor existed before thoracotomy would be known only after bronchoscopic biopsy. There are problems not considered in the pretreatment staging classification. There are certain features that alone indicate inoperability such as distant metastasis. Should the presence of two or more questionable features be additive and considered an inoperable finding? For example, should a small amount of pleural fluid not containing malignant cells and phrenic nerve paralysis be considered inoperable and therefore in stage 4?

When the rate of growth of a carcinoma of the lung is known by previous chest x-rays, should it be considered when assigning a stage? For example, should the patient with an apparently operable lesion of known 38 months' duration ever be placed in stage 1 or 2? Should the age of the patient, the very young or the very old, be considered when assigning a particular stage? The gynecologists do not consider duration of the cancer when known, nor the age of the patient when assigning a stage for a particular patient.\textsuperscript{10}

If patients with carcinoma of the lung when first seen or diagnosed were thus classified into pretreatment stages by some acceptable group of factors, there would soon accumulate a large number of specifically classified cases that could be gathered from the work of those interested in this disease. It would then be possible to evaluate the course of the disease when untreated and when treated by surgical excision, radiation therapy, chemotherapy, or any combination of these modalities. It is easy to
believe that patients in stage I would have a prognosis similar to that reported by Peabody. Patients classified in stage IV would be saved the misery of a thoracic exploration. In any case, the proper course of treatment could be much more accurately determined.

Conclusions
There is evidence to indicate more deficiency in early detection and diagnosis of carcinoma of the lung than in the so-called “dismal” result of treatment.

An enthusiastic program of early diagnosis should be carried to the medical profession and to the public. All available diagnostic methods should be used when lung disease is suspected. There should be a high index of suspicion of carcinoma of the lung in the older patient with pulmonary symptoms. No lesion of the lung should be considered innocent until definitely identified, even if thoracic exploration is necessary. The medical profession should adopt and emphasize the axiom: “No lesion of the lung should be allowed to exist unidentified.”

It is suggested that a pretreatment clinical staging classification of carcinoma of the lung promulgated by Clifton® be carefully studied, perhaps modified. When made acceptable, it could be adopted by the medical profession. An acceptable pre-

**Chart 5**

**Pretreatment Clinical Staging — Carcinoma of the Lung**

**Stage I**

Operation Indicated — Prognosis Good

1. Peripheral lesion not larger than 3 cm.
2. Central lesion at least 1 cm. lateral to carina — atelectasis not greater than one segment.
3. Not anaplastic (oat-cell) cell type.
4. No systemic symptoms.
5. Bilateral cervical (scalene) lymph node biopsy not indicated — no evidence of hilar, mediastinal, or distant metastasis.

**Stage II**

Operation Indicated — Prognosis Not Good

1. Peripheral lesion larger than 3 cm. but not from mediastinum to chest wall in size.
2. Central lesion 1 cm. lateral to carina but not more than lobar atelectasis.
3. Not anaplastic (oat-cell) cell type.
4. No systemic symptoms.
5. Bilateral cervical (scalene) lymph node biopsy negative — no evidence of hilar, mediastinal, or distant metastasis.

**Stage III**

Operation Questionable — Prognosis Almost Hopeless

1. Peripheral lesion of any size.
2. Central lesion not invading carina — may have whole lung atelectasis.
3. Any anaplastic (oat-cell) cell type.
4. May have systemic symptoms.
5. Bilateral cervical (scalene) lymph node biopsy negative. No evidence of mediastinal or distant metastasis.
7. Rib invaded but not vertebral body or vertebral process.
8. Phrenic nerve paralysis — Pancoast syndrome (if treated by preoperative radiation) — mediastinal invasion without metastasis.

**Stage IV**

Operation Not Indicated — Prognosis Hopeless

1. Size not important — may be very small.
2. Carina invaded by carcinoma with lobar or lung atelectasis.
3. Cell type not important.
4. Systemic symptoms if absent not important.
5. Distant metastasis proved — otherwise bilateral cervical (scalene) lymph node biopsy must be done.
6. Pleural effusion with malignant cells.
7. Vertebral bodies and/or vertebral processes invaded.
8. Mediastinal lymph nodes enlarged by roentgenogram.
10. Inferior laryngeal nerve paralysis.
11. Pulmonary artery invaded within 1 cm. of main pulmonary artery.

Chart 5: The chart is a modification of a pretreatment clinical staging classification for cancer of the lung suggested by Clifton®. If the adoption of cri-teria for the pretreatment clinical stage of development in bronchogenic carcinoma can do for lung cancer what it did for cancer of the cervix, surely the classification is worthy of development and adoption by our leading authorities and societies concerned with bronchogenic carcinoma. See Charts 3 and 4.
treatment clinical staging classification of carcinoma of the lung would permit accurate and worthwhile evaluation of results of treatment and it would emphasize our inability to detect the disease early.

**SUMMARY**

Complacency in diagnosis and treatment of carcinoma of the lung is based upon poorly understood statistical evidence. All statistical evidence indicates only 2 to 5 per cent of patients with carcinoma of the lung will survive five years or longer, but the figures are based upon patients when first seen by the thoracic surgeon even though the greatest number of these patients are beyond help by any method of treatment when first seen. The deficiency of early detection and diagnosis must be emphasized. There is a long interval of time when the carcinoma of the lung is not detectable by present methods; effort to study detection of invisible cancer during this period must be accentuated. All methods of detection now available must be utilized efficiently. No lesion of the lung should be allowed to exist unidentified. The medical profession should by careful clinical research and study establish a pretreatment clinical staging classification of carcinoma of the lung. If acceptable and adopted by the responsible medical and surgical associations throughout the world, a pretreatment clinical staging classification could become a method of pinpointing the deficiency in early detection and serve as a basis for recognition or judging the results of various types of treatment. The pretreatment clinical staging classification would permit careful study of groups of patients that are comparable at the time of diagnosis and at the time of treatment. It would in no manner dictate the type of treatment that might be used.

**Resumen**

Las nociones prevalentes acerca del diagnóstico y tratamiento del carcinoma pulmonar están basadas en datos estadísticos mal interpretados. Todas las estadísticas indican que solamente del dos al cinco por ciento de los casos de carcinoma pulmonar sobreviven cinco o más años, pero estos resultados corresponden a pacientes que son vistos por primera vez por el cirujano torácico cuando, en su mayor parte, son ya intratables.

No está demás insistir en las deficiencias diagnósticas y terapéuticas en este terreno. Hay un largo periodo de lactancia en que el carcinoma pulmonar es indiagnosticable por los procedimientos actuales. Precisa redoblar los esfuerzos dirigidos al diagnóstico precoz y obtener el mejor partido posible de los procedimientos disponibles al presente, aplicándolos con el máximo de eficacia. Ninguna lesión pulmonar debe permanecer sin ser debidamente identificada.

La profesión médica, mediante una investigación acuciosa, debiera establecer una clasificación basada en la graduación clínica y preterapéutica del carcinoma pulmonar. Si tal clasificación es aceptable y adoptada mundialmente, puede contribuir eficazmente a poner en evidencia las deficiencias existentes en el diagnóstico precoz y servir de base para la evaluación de las distintas modalidades de tratamiento. Servirá asimismo para el cotejo cuidadoso de grupos comparables de pacientes en ocasión del diagnóstico y tratamiento, sin prejuzgar en modo alguno acerca del tratamiento a seguir.

**Zusammenfassung**

Selbstzufriedenheit im Rahmen der Diagnostik und Therapie des Bronchialkarzinoms kann nur zur Ursache haben, daß das statistische Beweismaterial auf Unverständnis stößt. Das gesamte statistische Beweismaterial zeugt davon, daß nur 2-5% der Patienten mit Lungenkarzinom 5 Jahre oder mehr am Leben bleiben, jedoch sind diese Zahlenwerte das Ergebnis von Patientengruppen, die zuerst vom Thoraxchirurgen erfaßt wurden, während doch die allergrößte Zahl solcher Patienten schon jeneits jeder therapeutischen Mög-lichkeit stehen, wenn sie erstmal in ärztliche Hände gelangen. Die Unzulänglichkeit der Früherfassung und Diagnose-Stellung muß immer wieder heraustestellt werden. Es vergeht eine ganz erhebliche Zeitspanne, sofern das Lungenkarzinom mit den gegenwärtig zur Verfügung stehenden Methoden nicht nachweisbar ist.

Es müssen die Anstrengungen besonders hervorgehoben werden, um während dieser Zeitspanne das Karzinom im unsichtbaren Stadium zu er- mitteln. Ferner müssen alle Erfassungsmethoden, die z.Zt. zur Verfügung stehen, in möglichst wirkungsvoller Form zum Einsatz gelangen. Man sollte es niemals dabei bewenden sein lassen, einen Lungenbefund als nicht identifizierbar zu belassen. Die Ärzteschaft muß es ermöglichen durch sorgfältige klinische Forschung und Analyse, einem Behandlungsbeginn vorausgehende klinische Stadieneinteilung des Lungenkarzinoms aufzustellen. Ist diese annehmbar und durch die dafür zuständigen internen und chirurgischen Gremien in der zivilisierten Welt angenommen,
so wird eine solche — dem Behandlungsbeginn vorausgehende — klinische Stadieneinteilung eine Methode, um genau die Unzulänglichkeit in der Frühdagnostik zu treffen, und kann als eine Basis dienen zur Erkennung bzw. Beurteilung der Behandlungsresultate beim Lungenkrebs. Die dem Behandlungsbeginn vorausgehende klinische Stadieneinteilung wird es ermöglichen, eine Patientengruppe genau zu untersuchen, die z.Zt. der Diagnosestellung und zum Zeitpunkt der Behandlung vergleichbar ist.

Sie würde in keiner Weise die Behandlungsart vorschreiben, die man etwa in Angriff bringen könnte.

Complete reference list will appear in reprints.
For reprints, please write: Dr. Brantigan, 104 West Madison, Baltimore, Maryland.

SKIN-ELECTRODE IMPEDANCE

Skin-electrode impedance was measured for four different types of conventional electrocardiographic electrodes applied under different conditions. All types of contacts were frequency dependent; a decrease in impedance was found with increasing frequency. Occasionally, impedance values at a frequency range of 6 to 100 cycles per second were in the tens of thousands of ohms with all electrode types. Tracings obtained under working conditions were evaluated. Single channel electrocardiographs accurately recorded cardiac potentials; however, simultaneously recorded multiple channel data had considerable distortion in half of the subjects. Frank vectorcardiograms demonstrated significant amplitude loss in half of the patients, with the most prominent distortion occurring in the T wave as compared to QRS. The inclusion of a buffer amplifier between the skin-electrode contacts and the resistor network produced distortion-free tracings.


TUBULAR GASTRIC HERNIATION

Ten cases of stricture of the lower esophagus are discussed. These had gastric mucosa below the stricture in a part radiologically easily mistaken for the esophagus. In several of these a carcinoma was misdiagnosed or strongly suggested. All of the cases were due to stomach herniation and the herniated portion had become tubular in shape. If appropriate views are not taken radiologically, the appearances can be confused with a Barrett syndrome. As most of these cases were observed over a relatively short period of time, it appears that this type of lesion is not uncommon.


SYNDROME OF PRIMARY PULMONARY HYPERTENSION

The authors report nine patients with primary pulmonary hypertension. On the basis of the data derived, a supposition was made concerning the polyetologic nature of the disease which at first is manifested by a protracted spasm of small arteries and arterioles of the pulmonary circulation, subsequently leading to the development of sclerosis of the vascular walls until their complete obliteration and attended by a rise of pressure in the pulmonary artery. In the diagnosis of the stages of the disease, investigation of the gas exchange in conjunction with spasmolytic tests are of value.