Early Detection of Bronchogenic Carcinoma

ROBERT R. SHAW, M.D., F.C.C.P.*
Dallas, Texas

Sixteen years have now passed since Graham first successfully removed a total lung for bronchogenic carcinoma. Following this initial success other surgeons soon reported successful resections of lungs for carcinoma. In spite of the fact that the early mortality was above 50 per cent, surgical extirpation of the disease did introduce a ray of hope in the otherwise dismal picture of cancer of the lung. Improvements in methods of anesthesia, adequate blood replacement, and improved surgical technique in the handling of the hilus of the lung have reduced the mortality to less than 10 per cent. This improvement in mortality has been accomplished in spite of the fact that the indications for operability have been extended. It has now been found technically feasible to not only remove the lung but also remove a portion of the chest wall, the diaphragm, and the pericardium when the neoplasm has extended to these structures.

The overall salvage rate in bronchogenic carcinoma still remains disappointingly low. Far too many patients presented to the thoracic surgeon are in too far advanced a stage of their disease to permit surgical removal of the neoplasm. Recently we have surveyed our experience for the past three years with 210 patients having bronchogenic carcinoma. We found that 50 per cent of the patients were obviously inoperable when seen by us either because of extension of the carcinoma to other portions of the body, the poor general condition of the patient, or invasion of the carcinoma within the chest so as to preclude the possibility of a successful resection. In the remaining 50 per cent where it was thought that surgery offered a reasonable chance of either effecting a cure or of palliation, it was found impossible to carry out a resection in half of these patients. This means that only 25 per cent of the

*Associate Professor of Thoracic Surgery, Southwestern Medical College, Dallas, Texas.

Copyright, 1950, by the American College of Chest Physicians
original group were suitable for surgical resection of their tumor. In a portion of this 25 per cent only palliation was being attempted since there was no chance of complete cure. There were five deaths in the 72 resections, a mortality of 6 per cent. In view of the age group of the patients and the technical difficulties at times encountered in attempting resection, it is not believed that the mortality of resection for carcinoma can be appreciably reduced. The only hope, therefore, in improving the overall results in the surgical treatment of this disease is in its early detection.

A review of the history of these patients showed that there was a delay of approximately five months between the time that the patient first experienced symptoms of the disease and his first visit to a physician. This delay will be a difficult one to eliminate. It may be that through education of the public as to the significance of changes in a cough history and of the spitting up of blood, patients may present themselves earlier to physicians and an earlier diagnosis can be made. More significant, however, was the delay between the time the patient presented himself to the physician and of making a correct diagnosis. An average of six months was consumed in making an accurate diagnosis in this group. The responsibility for this six months' delay is that of the medical profession and is one that we should try hard to eliminate. It has been estimated that for each month delay following the diagnosis of bronchogenic carcinoma in an apparently operable state the patient loses approximately 25 per cent of his chance of obtaining eventual cure. Neoplasm is an advancing disease and although there may be various rates of growth, no one can predict at just what time a blood borne metastasis may go to a distant organ or when the lymphatic extension to the nodes of the mediastinum may become so extensive that surgical extirpation is impossible. Bronchogenic carcinoma once diagnosed should be treated as an urgent surgical problem and all other factors in the patient's situation should be considered secondary to its treatment. Attempts to improve the patient's condition generally for surgery are not rational in that it is impossible to build up the patients against the ravages of this disease. Any time lost in this building up process may actually deny the patient his chance to be cured because of some distant extension of the disease.

What are the reasons for this six months' delay between the time the patient presents himself to the physician and the time an accurate diagnosis is made? It certainly is not a lack on the part of the physician in his concern for his patient. In almost every instance the delay is due to an original error in diagnosis. The diagnoses most often made in the early case of bronchogenic carcinoma are asthma, bronchitis, unresolved pneumonia, virus
Bronchogenic carcinoma has now become one of the most frequent neoplasms encountered at the autopsy table. It is the most common carcinoma as a cause of death in males. If the prevalence of this condition is kept in mind especially in the age group above 40, many more of these patients having this condition will come to early diagnosis. There is also a natural reluctance to make a diagnosis of a disease that carries a high mortality. This reluctance should give way to an eagerness on the part of the physician to detect these neoplasms early when cure is still possible. Many physicians have gained their conception of the pathology of this disease from autopsy table so that they do not think in terms of early cell changes in the bronchial mucosa causing an obstruction of a small branch bronchus without obvious tumor formation.

Virus pneumonia and unresolved pneumonia are two diagnoses which are frequently made that contribute to the delay in diagnosis of bronchogenic carcinoma. The diagnosis of virus pneumonia is frequently made on flimsy evidence. There is no positive diagnostic test for this condition. The diagnosis can only be made after other conditions which may simulate virus pneumonia have been completely ruled out. If a diagnosis of virus pneumonia is made and the lesion within the chest does not clear promptly, as a lesion of virus pneumonia should, the physician must immediately realize that an error in diagnosis has been made and that neoplasm is to be considered. Virus pneumonia accounted for more than 50 per cent of the errors in diagnosis in patients having bronchogenic carcinoma that were finally referred to us for treatment. Persisting in this diagnosis often caused a delay beyond the time when it was possible to do anything for the patient surgically.

Unresolved pneumonia, a common diagnosis in the past, now in view of a better understanding of pulmonary lesions should be discarded. This is a diagnosis made from roentgen examination of the chest to describe a shadow of unknown origin. Pathologists do not recognize it as a pathological entity. The term they use in describing a pulmonary lesion producing such a shadow is fibroid pneumonitis which usually occurs beyond a blocked bronchus. The block may be due to neoplasm. True pneumococcal pneumonia will resolve by resolution and if a shadow persists more than two weeks after the initial onset of the disease an error has been made in diagnosis. Tuberculosis, pulmonary abscess, pneumonitis surrounding bronchectasis, primary bronchogenic carcinoma, and fungus disease of the lung are the common conditions that have
been mistakenly called unresolved pneumonia. The fact that a lesion has not resolved means that it was not a true pneumonia. The failure of resolution should prompt the physician to make a more accurate diagnosis.

Bronchogenic carcinoma starts with a piling up of cells in the bronchial mucosa. In its beginning it is entirely intraluminary. Thickening of the bronchial mucosa due to neoplastic changes in the cells will cause an obstruction of the bronchus which may allow an infection to be set up in the segment beyond the branch bronchus. The carcinoma at this time may be so small in size that it cannot be detected on the x-ray film. It is the pneumonitis beyond the blocking tumor that calls attention to the fact that something is wrong within the lung. At times a careful and even repeated search for the neoplasm will be necessary even after the lung has been removed for bronchogenic carcinoma. The prosector is often impressed by the fibroid pneumonitis in the lung and entirely misses the small stenotic bronchus which has been occluded by the neoplastic tissue arising in the mucosa. It may be several months before the neoplasm breaks through the bronchial wall and expands into the pulmonary tissue to a sufficient size to cause an x-ray shadow denoting its presence. In squamous cell carcinoma which is the type of malignancy that has the slowest growth potential and is thus the type that can most often be helped by surgery, its gradual extension may take place over a period of years. Recently I observed a patient who had an extremely early bronchogenic carcinoma in the lingular branch of the left upper lobe. Fortunately the carcinoma could be seen by bronchoscopy and a small bit was removed for pathologic study giving a positive diagnosis. The removal of the bit of carcinoma so improved the drainage of the segment which was blocked that the patient received immediate symptomatic relief and in spite of the fact that he was told that he had a neoplasm which would undoubtedly cause his death, he refused to have the lung removed. It was almost a year before the lesion caused sufficient trouble to prompt him to have anything further done about it. At this time he did consent to have x-ray therapy. The tumor gradually extended to block the entire lung but it was three years and four months following the diagnosis of the tumor before the patient finally succumbed to his disease. This case illustrates how long the process may go on before death ensues. In many patients even with small bronchial tumors it is possible to determine by history that the lesion undoubtedly was present for a year or more.

The diagnosis of bronchogenic carcinoma is made by a careful correlation of the history, laboratory findings, roentgen inspection of the chest, bronchoscopy if indicated, and exploratory thora-
cotomy. Examination of pleural fluid and biopsy of metastatic nodes, are not pertinent to this discussion since they are procedures used to diagnose an advanced stage of the disease. Needle biopsy of the pulmonary tumors is also not to be recommended as a means of early diagnosis since it might introduce complications which would make surgery difficult.

The history of the symptoms may be sufficient when considered in view of the x-ray appearance of the chest to give a clinical diagnosis of bronchogenic carcinoma. Even in the presence of an apparently negative examination of the chest the history alone may make one extremely suspicious that a neoplasm is present in the bronchi. Neoplasms in the left lung behind the heart shadow and those entirely intrabronchial may not cast shadows that can be easily seen and thus may escape detection on the average x-ray film. The early symptoms of bronchogenic carcinoma are: wheeze, cough, and the expectoration of blood streaked sputum. Such symptoms as pain, dyspnea, fatigue and weight loss are all symptoms of advance stage of the disease.

A localized wheeze may be the only symptom present in the early stage of bronchial neoplasm. The roentgen film of the chest may show a region of localized emphysema but this finding although highly significant is usually overlooked. Later infection causing a low grade fever will occur. Chemotherapy may cause symptomatic relief of the cough and fever and there may be an actual clearing of the shadow in the lung field. The physician should not conclude by this clearing that a neoplasm is not present. Incomplete clearing or the prompt recurrence of the infection in the same or neighboring segments of the lobe is highly suggestive of bronchial neoplasm even though no tumor mass can be seen. Although further studies do not prove the presence of a carcinoma, exploratory thoracotomy should be carried out.

Cough as a symptom may be difficult to evaluate. It is a common symptom with many diseases within the chest. Patients having early bronchogenic carcinoma usually give a history of having had a hacking cough ascribed to smoking which may have been present for many years. It is the change in the normal cough habit of the particular individual that should make one suspicious that a neoplasm has started in one of the bronchi. Paroxysms of coughing as if the person is trying to expectorate a foreign body is a significant type of cough.

The cough is usually non-productive although occasionally small bits of tenacious mucous may be expectorated. Blood streaks and blood clots may be seen in this mucoid material. The daily recurrence of blood in the sputum is highly suggestive of bronchial neoplasm. Severe hemorrhages may occasionally occur with bron-
chial carcinoma but this is exceptional. Frank hemoptysis are common in the presence of bronchial adenomas—a clinical benign tumor.

Laboratory examinations may indicate that the symptoms are due to another disease. Any sputum expectorated by the patient should be carefully examined for tubercle bacilli, predominating pyogenic organisms, and fungi. A positive laboratory report for any of these organisms should, however, be correlated with the history and with the appearance of the x-ray films since any one of these conditions may be present in addition to bronchogenic carcinoma. It was formerly thought that bronchogenic carcinoma was not common in patients having pulmonary tuberculosis. It is now realized that it is present in the same ratio as with people who do not have tuberculosis. The finding of fungi in the sputum may or may not be significant. Actinomyses, monilia albicans and even blastomyses are fairly common secondary invaders in bronchial secretions from pulmonary lesions. Their presence must not be accepted as evidence that these organisms are causing the condition unless it is felt certain that bronchogenic carcinoma has been eliminated as a possibility.

The extensive use of sensitivity skin tests has often caused confusion and delay in the diagnosis of bronchogenic carcinoma. It must be realized that these tests are only diagnostic aids and are not specific in themselves. The fact that a skin test is positive for coccidioidal mycosis does not mean that the shadow seen in the lung field is a coccidioidal granuloma. A positive tuberculin test is of no significance whatever in a patient having a shadow within the chest which could be a neoplasm. These skin tests at best can only lend supporting evidence and must never be considered diagnostic in themselves.

English observers many years ago pointed out the value of the examination of sputum with Wright stain for neoplastic cells. Lately the staining methods of Papanicolaou have revived interest in this subject. The clinical value of this examination depends much upon the experience of the personnel performing it. In some clinics as high as 85 per cent positive diagnosis of bronchogenic carcinoma are made by this method. It is not always necessary to collect bronchial secretions by bronchoscopy in order to make a diagnosis in this manner. Often by carefully selecting material coughed up by the patient, neoplastic cells can be demonstrated by these staining methods. It is important to train technicians to select material which contains dots of blood or blood streaks. The blood has come directly from the neoplasm and is more likely to have carried with it a few neoplastic cells. The finding of such cells in the sputum although it may clinch
the diagnosis does not make a bronchoscopy unnecessary since it will be important to make certain observations at the time of bronchoscopy to indicate whether or not thoracotomy should be carried out.

X-ray inspection of the chest using both posterior-anterior and lateral films is the most valuable diagnostic method that we have in investigating a patient who may have an early bronchogenic carcinoma. The neoplasm itself may not be visualized but the effect of the neoplasm in blocking the bronchus may give rise to shadows which are obvious. The pattern of these shadows in being limited to a lobe or to a segment of a lobe is highly suggestive of a block in a bronchus with suppuration beyond. The lateral film should always be taken along with the posterior-anterior film since there are fairly large regions in the lung fields that are not visualized by the ordinary posterior-anterior film. Small neoplasms can be obscured by the heart shadow. Since neoplasms tend to be in the major bronchi situated in the root of the lung it may be hard to interpret small changes in this region because of the presence of large vessels and lymph nodes. The lateral film will enable one to visualize many of these obscure areas. Especially significant is the small sharply circumscribed mass which may lie directly in the hilar area within the arch of the aorta as shown on the lateral film. This is highly suggestive of a neoplasm and if the clinical history supports may be sufficient to make an absolute diagnosis. In many patients an x-ray film of the chest after instilling iodized oil into the tracheobronchial tree will yield valuable information. An abrupt block of a bronchus or the tapering of a branch bronchus as shown by the oil filling may lend further support to a diagnosis of a bronchial neoplasm. One must always keen in mind in the study of x-ray films that we are interpreting shadows and that there is nothing diagnostic about the type of shadow cast by bronchogenic carcinoma. Interpretation of the shadow must be made in correlation with the history, the physical signs, the laboratory tests, and findings at bronchoscopy.

Mass x-ray surveys may bring to light bronchogenic carcinomas which are still in the asymptomatic stage. These are usually the small peripheral neoplastic masses which have not yet caused irritation of a major bronchus. Every sharply circumscribed abnormal shadow within the lung fields should be treated with extreme suspicion. It is true that many other lesions may simulate the appearance of neoplasm and may be of a type which will not harm the patient. Nevertheless the chance that the lesion is malignant is so good that exploration should be recommended when such a shadow is found. X-ray surveys have definite limita-
tions, however, in the early detection of bronchogenic carcinoma. It is not feasible to repeat these surveys at frequent intervals at the present time. Due to this fact, a person with a perfectly negative x-ray film at one period of time may develop bronchogenic carcinoma a few months later. This neoplasm will probably not be discovered until the patient has reached a symptomatic stage since he has already been assured that the chest is not the site of disease. It is also possible that the survey film may not show a very early carcinoma if suppuration has not occurred beyond the blocking tumor. In the future it may be possible to take yearly x-ray films on everyone who has passed the age of 40. Routine periodic x-ray surveys of this sort should undoubtedly bring to light many more bronchogenic carcinomas in a curable state.

Bronchoscopy is a valuable procedure in both the diagnosis of the bronchogenic carcinoma and in the evaluation of the patient from the standpoint of operability. It must be remembered that all parts of the bronchial tree are not visible by bronchoscopy. This means that many carcinomas arising in the periphery of the lung or in the second order branch bronchi of the lower lobes and in the first order bronchi of the upper lobes are not accessible to biopsy through the bronchoscopic route. It is true that the aspiration of secretions during the time of bronchoscopy may give material which upon examination will show malignant cells. Failure to find these cells, however, does not rule out carcinoma. In view of the limitations of bronchoscopy in examining the tracheobronchial tree it must be remembered that a negative result does not mean that carcinoma is absent. Bronchoscopy, should, however, be done routinely before contemplating surgery since it can yield very valuable information even if the tumor cannot be seen. At times at bronchoscopy it may be found that the shadow seen in the x-ray film does not comprise all of the tumor within the lungs. Occasionally the shadow seen upon x-ray films may be peripheral and yet there may be gross involvement of the bronchi in the region of the bifurcation of the trachea. In the very early bronchogenic carcinoma bronchoscopy becomes less valuable. In less than half of the patients diagnosed in an early stage of their disease will it be possible to see the tumor. In many patients the clinical history is so strongly suggestive that exploration of the chest is advisable in spite of negative bronchoscopic findings.

Exploratory thoracotomy has now become so safe that it can be recommended even in the absence of a positive pathological diagnosis of bronchogenic carcinoma. At the time the chest is opened the lung can be palpated and specimens removed for pathologic study by frozen section if this seems desirable. It must be admitted
that even at the time the chest is opened it is often difficult to make an absolute diagnosis of bronchogenic carcinoma. The trained observer, however, by palpat ing the root of the lung and the bronchial tree can usually detect changes in the bronchi which are indicative of bronchogenic carcinoma.

The passage of time is not on the side of the patient who has a bronchogenic carcinoma. For this reason it is unwise to advise a patient to wait for a specified period of time to see what will happen to symptoms or to an unexplained shadow which has appeared in the x-ray film. Nearly always the period of waiting extends past the time that anything can be done for the patient with surgery. If there is any suspicion of bronchial carcinoma the patient deserves to have an exhaustive study in an attempt to make an accurate diagnosis. There are times when after a careful study there does not seem to be sufficient evidence to warrant advising an exploration of the chest. In this circumstance, a period of close observation can be advised with repetition of the diagnostic studies that seem advisable if the symptoms do not improve and the shadow as seen by x-ray film does not completely disappear. In some cases it may be necessary to honestly tell the patient the condition that is being suspected in order to gain his complete cooperation. Time is the essence of success in surgical treatment of bronchogenic carcinoma. Although it is true that bronchial carcinomas extend at different rates in various individuals, the extension is inexorable and for that reason the passage of time is working continually against the patient.

Unfortunately there is a large group of patients having bronchogenic carcinoma in which it is impossible to make a diagnosis in a state where surgery can offer any chance of cure. In studying our patients we found that in 25 per cent the initial complaint which prompted the patient to consult his physician was one which indicated inoperability. Headaches due to cerebral metastasis, loss of voice due to involvement of the recurrent laryngeal nerve, painless pleural effusion which caused only shortness of breath, difficulty in swallowing due to involvement of the esophagus, and skin metastases indicating generalization of the neoplasm are rather common initial complaints which prompt the patient to visit his physician. All of them indicate inoperability. Pain may not indicate absolute inoperability but is usually a sign of poor prognostic significance since it may mean extension of the tumor beyond the lung to some parietal structure. We also found that approximately 20 per cent of our patients had undifferentiated bronchogenic carcinoma. One of this pathological type is highly invasive and tends to metastasize early through the blood stream to different parts of the body. There has been only one question-
able five year cure for this type of carcinoma reported in the literature. It has come to be recognized that an undifferentiated bronchogenic carcinoma should probably be considered a sign of inoperability. If we add the 25 per cent whom the initial complaint indicated inoperability to the 20 per cent who have the undifferentiated type and allow for some over-lapping in the two groups we estimate that 40 per cent of patients having bronchogenic carcinoma are inoperable at the time they are first seen by their physician. This leaves us only 60 per cent of patients in whom an early diagnosis may make a cure possible. These statistics are not quoted to add discouragement to the problem of bronchogenic carcinoma but only to point out the difficulties which confront the practitioner and the thoracic surgeon in dealing with this disease.

Intelligent observation by a patient of personal habits and the alertness of a physician may "pay off" in the early diagnosis of bronchogenic carcinoma. This is well illustrated by a patient seen by me over four years ago. A 64 year old woman who otherwise was in perfect health noticed that for every morning of the previous three weeks she had cleared her throat and raised some mucoid material which contained small blood streaks. This was an abnormal occurrence for her. She immediately consulted her personal physician who made x-ray film inspection of her chest which showed a small sharply circumscribed shadow in the left upper lobe in the anterior portion of the chest. Examination of the sputum revealed no significant organisms. The woman had no fever, did not feel tired, and had no pain. Six years previously she had a carcinoma of the cervix which also had caused minimal bleeding and was detected early. This carcinoma was treated by radium therapy and frequent examinations of the pelvis had failed to reveal any further evidence of neoplasm. Thoracotomy was advised to determine the nature of the lesion within the left lung and the patient readily agreed. Upon opening the chest a small hard lesion was felt in the anterior segment of the left upper lobe. It was not adherent to the parietal pleura but there was a small reddened area where the lesion had been in contact with the parietal pleura. The parietal pleura over this region was widely excised. Examination of the hilum of the lung failed to reveal enlarged lymph nodes. The segmental bronchus and artery were isolated and divided and the segment of the lung was stripped from the remaining portion of the lobe. Pathological examination of the specimen revealed it to be a grade I, squamous cell carcinoma which had undergone central necrosis accounting for the expectoration of the blood streaked sputum. The woman made an uneventful recovery from surgery. She has remained entirely well.
to the present date. The intelligence of the patient and the alertness of the physician has contributed to prolongation of this woman's life with a minimal sacrifice of pulmonary tissue. It is not often that one is going to be so fortunate to find a case as early as this one but continued vigilance on the part of the general practitioner and insistence upon accurate diagnoses of lesions appearing within the lung will bring more and more patients having bronchogenic carcinoma to the thoracic surgeon at a stage where the lesion can be completely removed.

**SUMMARY**

1) In spite of the fact that the mortality of pulmonary resection for bronchogenic carcinoma is now less than 10 per cent, the salvage of patients having this disease is still disappointingly low. Earlier diagnosis is our only means of improving this salvage.

2) In our experience there is a five months' delay between the onset of symptoms and the time the patient presents himself to the physician and a further delay of six months between the visit to the physician and a correct diagnosis.

3) The delay in correct diagnosis is usually due to the making of an incorrect diagnosis. Virus pneumonia and unresolved pneumonia are two diagnoses that are frequently made in patients having this disease.

4) The early bronchogenic carcinoma represents only a change in the bronchial mucosa which obstructs the bronchus. Signs or symptoms of bronchial obstruction should be regarded with suspicion. A localized wheeze and the finding of a region of localized emphysema on the x-ray film are the earliest symptom and sign of bronchogenic carcinoma. Cough is the most common symptom complained of by the patient. In evaluating this symptom the change in the cough history from a hacking cough to paroxysmal type of coughing is the most important factor.

5) X-ray inspection of the chest is the most valuable diagnostic method in the detection of this disease. Mass radiography is bringing to light many early lesions in the asymptomatic stage. Mass radiography, however, unless repeated often cannot be the answer to early diagnosis.

6) Bronchoscopy is an excellent diagnostic procedure but when negative does not rule out bronchogenic carcinoma. The examination for neoplastic cells in material coughed up or obtained at bronchoscopy has made it possible to make many more early diagnoses.

7) Exploratory thoracotomy may often be necessary in order to
diagnose early bronchogenic carcinoma. Exploratory thoracotomy is safe and should be recommended when there is sufficient evidence to suspect early neoplasm.

8) In our patients it was found that approximately 40 per cent were inoperable at the time they first visited the physician. This disappointing fact is one reason why the salvage rate in this disease is still low.

9) Continued vigilance on the part of the general practitioner and insistence upon accurate diagnoses of lesions appearing within the lung will bring many more patients having bronchogenic carcinoma to the thoracic surgeon at a stage where the lesion can be completely removed.

RESUMEN

1) A pesar de que la mortalidad en la resección pulmonar, por cáncer broncogénico es ahora por debajo del 10 por ciento, la cantidad de enfermos curados es todavía muy pequeña.

2) En nuestra experiencia, hay un período de cinco meses de espera, desde el comienzo de los síntomas hasta que el enfermo es visto por un médico; y después otra espera adicional de seis meses hasta que el diagnóstico correcto se ha hecho.

3) Generalmente la tardanza en el diagnóstico correcto es debida al hecho de que se ha hecho un diagnóstico incorrecto. Pneumonía a virus filtrable, o pneumonia no resuelta, son dos diagnósticos que se hacen frecuentemente en enfermos con esta enfermedad.

4) El cáncer broncogénico, al principio presenta solamente un cambio en la mucosa bronquial, la cual obstruye el bronquio. Signos y síntomas de obstrucción bronquial, deben ser considerados sospechosos. Un roncus localizado y una región de enfisema localizado en la radiografía, son los primeros signos y síntomas del cáncer broncogénico. La tos, es el síntoma mas común. Un factor importante en este síntoma, es cuando cambia, desde una tos seca, a una tos paroxística.

5) El exámen radiográfico, es el método mas importante en el diagnóstico precoz de la enfermedad. Radiografía en masa, de la población, es un factor muy importante en los casos que todavía no presenten ningún síntoma.

6) La broncoscopía es un medio de diagnóstico excelente, pero cuando es negativa pierde su valor. El exámen citológico de los esputos o de los lavados bronquiales, ha hecho posible muchos diagnósticos precoces.

7) Toracotomía exploradora, frecuentemente es necesaria para
hacer un diagnóstico precoz de carcinoma broncogénico. La toracotomía exploradora no presenta ningún peligro y debe ser recomendada siempre que haya evidencia suficiente de una sospecha de neoplasma precoz.

8) En nuestra serie, hemos encontrado que aproximadamente 40 por ciento eran inoperables en la primer visita médica. Este hecho triste, es una de las razones del porqué, el porcentaje de curas es tan pequeño.

9) Vigilancia continua de parte del médico práctico, un diagnóstico mas preciso de las lesiones pulmonares, traerá más enfermos con cáncer broncogénico a la atención del cirujano del tórax, en un momento cuando la lesión puede ser extirpada completamente.