Cancer

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The Problem of Early Diagnosis

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This first film in a series for the medical profession is general in scope.

Subsequent Films will deal with Cancer by specific sites.

The time: the year 1881.
The place: the general hospital in the city of Vienna, Austria.
Theodore Billroth, teacher of medicine, pioneer surgeon.
The event: so important that medical history records it as the beginning of a new era.
The problem: to attempt a cure for a disease as old as humanity.
The patient: Theresa Heller, admitted to the hospital four days ago.
Symptoms: gastric pain for three months.
Her diet: a few spoonfuls of sour milk daily.
Pulse: thready. Evening temperature: 38.2°C
Diagnosis: carcinoma of the pylorus.

CHIRURGISCHE KLINIK DES ALLGEMEINEN KRANKENHAUSES
WIEN
29. JÄNNER 1881
Dr. TH. BILLROTH
EINE MAGENKREBS OPERATION

Up to this time, no malignant tumor of the stomach had ever been successfully removed. The hazards attending such an operation were many: the ever present threat of infection, the

possibility of surgical shock, the dangers of prolonged anesthesia, the knowledge that others had failed. But pitted against this was Billroth's conviction that this was an early lesion, an operable case, that his years of research could now be applied to the aid of a human being. Complete removal of the disease tissue was the only way to prevent this patient's certain death. But removal of the cancer was not enough. A safe and adequate repair was of equal importance.
As history now knows, this operation, the Billroth one, was a success. More than any other fact, it proved the importance of early diagnosis, followed by prompt, adequate treatment.

Today, gastric cancer is still a serious medical responsibility. Today as in Billroth's day, surgery offers to the patient the only hope of cure. However, thanks to the great technical and intellectual progress achieved in all branches of medical science, the management of the cancer patient is vastly improved.

The surgeon today, as did Billroth, intervenes in gastric cancer in the hope that the disease is limited solely to the stomach. With this in mind, careful palpation of known sites of spread and of the stomach, determines the extent of the disease and these (...)

Radical resection of the omentum, together with wide clearance of the lymph nodes is a routine measure to remove all possible disease.
In the Billroth tradition, the pyloric tumor can now be isolated by a safe margin of the duodenal segment. Similarly, the major portion of the gastric segment will be sacrificed. In most of the modifications of the Billroth's operation, the duodenum is closed and the reapproximation of the remaining portion of the stomach with the small intestine is established.
The resultant anastomosis, tension free and air tight, will permit the patient normal dietary comfort with but slightly modified dietary habits. Thus, the operation initiated by Billroth more than sixty years ago, remains today the only treatment of gastric cancer that offers any hope of cure.

BREAST CERVIX STOMACH RECTUM LUNG

Of five major sites for malignant neoplasms, cancer of the stomach has the third highest incidence. However, of the mortality averages for these sites, the mortality of gastric cancer is among the highest.

MORTALITY – AVERAGE CASES
BREAST CERVIX STOMACH RECTUM LUNG

This disease causes more than one fourth of all cancer deaths. The reason for this high mortality is seen in the clinical behavior of cancer of the stomach. Although cancer may occur primarily in any area of the stomach, more than three fourths of these lesions occur in the region of the pylorus. Dyspepsia or indigestion is the most common first complaint. Here, as the cancer continues to grow, mechanical obstruction may take place. As a result of this growth, pain, unrelated to food, becomes evident. In addition, there may be loss of appetite, vomiting and fatigue. It is on this stage of disease, and because of these symptoms, that the average patient sees his physician. At the time of surgical exploration, often delayed as much

as several months, the disease is usually found to have invaded the regional lymph nodes. However, one third to one half of all patients seen in this stage are still candidates for resection. Nevertheless, despite radical resection, the tragic factor of delay permits local recurrence of disease, together with distant metastases which result in the death, within five years, of three fourths of these patients.

MORTALITY – GASTRIC CANCER
100% 50% 0%

These deaths, added to all other gastric cancer deaths account for the dark overall picture of gastric cancer. Any appreciable reduction of this mortality requires that cancer be suspected while it is still confined entirely to the stomach. Unfortunately, this clinically young lesion provides little evidence upon which to hang this suspicion, either by the patient himself or by his physician. As a rule, the gastric cancer patient is a mature adult with a complaint of vague dyspepsia, whose tentative diagnosis is gastric ulcer. In other cases, the only early complaint may be unexplained loss of weight, associated with some degree of secondary anemia. And sometimes the symptoms may not be suggestive of gastrointestinal disease at all. In general, a mass is not palpable in early gastric cancer although these symptoms, chronic dyspepsia with or without pain, anorexia, weight loss, secondary anemia, are suggestive of many disorders, the most serious single disease which may cause one or any of them is cancer. Therefore, whenever this suspicion exists, the patient should be given the benefit of a thorough examination.

ONLY THE PHYSICIAN'S HIGH INDEX OR EARLY SUSPICION, FOLLOWED BY ACCURATE DIAGNOSIS, CAN MAKE POSSIBLE THE BENEFITS OF EFFECTIVE TREATMENT.

Early suspicion. Accurate diagnosis. Effective treatment. By the application of this triad of management, early stomach cancer can be excised sufficiently to reduce the likelihood of recurrence.

MORTALITY – GASTRIC CANCER
100% 50% 0%

EARLY
MORTALITY – GASTRIC CANCER
100% 50% 0%

The statistics in such cases of early gastric cancer show a mortality decrease of nearly half.

A similar result can be achieved in breast cancer. Of the four quadrants of the breast, the upper quadrant is the usual site of cancer. Regardless of site however, the behavior of breast cancer is quite uniform. In its early stage, this tumor, like most cancer, develops silently. However, as growth continues, the connective tissue is involved, resulting in flattening or dimpling of the skin. By the same process there is often retraction of the nipple. In addition, the regional nodes become involved because of lymphatic spread. It is at this stage of disease that the average patient is seen by her physician. The treatment permitting the greatest

chance for survival is a radical mastectomy. However, about three out of four patients so treated will succumb within five years due to local recurrence and to distant metastases to the supraclavicular nodes, the other breast and to the lungs and bones. These cases, together with other breast cancer fatalities, result in this statistical picture.

MORTALITY – BREAST CANCER
100% 50% 0%

Any reduction of this mortality requires that breast cancer be suspected while it is confined entirely to the breast. The mass of early breast cancer however, may be interpreted as benign disease. Palpation alone is not enough to differentiate between a benign and a malignant mass. Visualization of the breast in various positions may be required, before eliciting a diagnostic sign of early cancer.
This sign, skin retraction, so consistent in malignancy, should call for an immediate microscopic examination of suspected tissue.

EARLY SUSPICION
ACCURATE DIAGNOSIS
EFFECTIVE TREATMENT

A local excision and examination of all breast tumors should be made in the operating room. If the excised mass is found to be malignant, a radical mastectomy can be performed immediately. Except in rare cases, a simple mastectomy has no place in a surgery of breast cancer. Adequate flat development permits better exposure of the operative field. This exposure makes possible thorough removal of both pectoral muscles.
Removal of the pectoral muscles now permits meticulous dissection of the axilla.

Only by such radical dissection can suspected areas of spread be included in the removal of the breast itself. In a great majority of cases, following this operation, the patient will have the normal use of her arm. But what is vastly more important: the diseased breast has been excised widely enough and early enough to diminish the probability of recurrence. Thus, the mortality of early breast cancer can be effectively reduced.

EARLY
MORTALITY – BREAST CANCER
100% 50% 0%

Cancer of the large bowel offers an equal challenge, inasmuch as nearly half of these growths occur in the rectum. Cancer of the rectum usually begins as a lesion confined to the mucosa. As it grows however, ulceration of the mucosa takes place, producing intermittent rectal bleeding. At the same time, mechanical venous blocking may initiate hemorrhoids. A surprisingly large number of patients are treated for hemorrhoids without any investigation made to rule out the possibility of underlying cancer. As further growth of the tumor takes place, intraluminal obstruction produces constipation or diarrhea or both alternately with the stools frequently containing mucus and blood. It is with these symptoms and in this stage of disease that the patient generally sees his physician. An abdominal perineal resection offers this patient the best opportunity for survival. But here again, the frequent delay of treatment

results in the recurrence of disease both locally and distantly, and accounts for the deaths within five years of more than three quarters of these patients.

MORTALITY – RECTAL CANCER
100% 50% 0%

These losses from recurrence together with cases considered inoperable, result in the high mortality of rectal cancer. Since more than half of rectal cancers originate within reach of the examining finger, here is the first and perhaps simplest line of attack against this disease. If a rectal lesion is suspected, or if rectal symptoms are present, the patient should immediately be given the benefit of a thorough examination. This should, in addition to the digital examination, include proctoscopy and X-ray together with microscopic study of tissue specimens.

EARLY SUSPICION
ACCURATE DIAGNOSIS
EFFECTIVE TREATMENT

In the treatment of rectal cancer, the rectum is first approached through an abdominal incision. This is necessary in order to free the lower bowel, a considerable segment of which must be included in the resection. Here again, radical resection is a requirement in order to ensure the removal of all tissue which may potentially be involved. The distal segment, after being carefully capped to prevent contamination, is tucked beneath the pelvic floor to be removed through the perineum. The proximal segment is carried through the abdominal wall to form a colostomy. Patients may get along without soilage and even without a colostomy bag, providing the bowel is irrigated thoroughly at regular intervals.
The perineal phase of the operation can usually be undertaken immediately. Careful dissection, much accomplished bluntly, prevents injury to the prostate and to the seminal vesicles. Extirpation of this disease is accomplished by the complete removal of the rectum. By such adequate surgery, rectal cancer can be treated so as to reduce the likely rate of recurrence.

EARLY
MORTALITY – RECTAL CANCER
100% 50% 0%

The statistical picture of these early cases rewards our efforts by showing a mortality decrease of dramatic proportions.

The female genital track is a frequent site of cancer. And of these lesions, about two thirds occur in the cervix. In its early stage, this lesion may be misinterpreted as a benign condition such as cervical erosion. As growth continues however, leukorrhea usually becomes evident or more pronounced. And with ulceration of the cervical mucosa, spotting or frank bleeding may occur. This bleeding in women of menopausal age is often mistakenly viewed as sign of the change of life. Further extensive growth may take place without new symptoms being added. Here again we have a typical picture caused by delay which too frequently the patient presents to her physician. Radiation has been widely used in the treatment of this disease.

External radiation by high voltage X-ray, supplemented by intracavitary radium therapy has sufficient effect upon these lesions to permit the five-year survival of one out of four of these patients.
Radiation therapy however, is not the only form of treatment. Today, modern surgery together with improved pre- and postoperative care permit complete extirpation of the disease with safety in selected cases. In addition, the surgical approach allows visualization and the removal of the regional lymph nodes. Despite radical surgery, despite irradiation, most of these patients are seen too late, and again, local recurrence of disease, lymphatic spread, and metastases cause the death within five years of about three out of four.

And so, the average five-year result.

MORTALITY – CERVICAL CANCER
100% 50% 0%

Cervical cancer must and can be suspected early. True, this lesion may be masked by leukoplakia or by cervical erosion. Therefore, the family physician should take advantage of tissue biopsy in the presence of any cervical abnormality. Tissue biopsy is a diagnostic method of proved accuracy. But on the other hand, a perfectly normal appearing cervix may mask underlying early cancer. To determine the likelihood of such occult disease, the physician has at hand the cytologic method of cancer detection. Such cytologic tests followed by biopsy examination when indicated have an encouragingly high incidence of accuracy. A pelvic examination including tissue or cytologic studies should be made routinely in all cases of vaginal complaint if cervical cancer is to be found early. And when such a routine study is found suspicious of cancer, (...) the patient should have the benefit of immediate treatment.

EARLY SUSPICION
ACCURATE DIAGNOSIS
EFFECTIVE TREATMENT

Effective treatment by irradiation often calls for massive X-ray dosage of the entire pelvis. This is frequently supplemented by the intracavitary application of radium or, in some instances, radium may be the only form of therapy. Thus by adequate treatment, whether radiological or surgical, cancer of the cervix can be interrupted early enough to minimize the danger of recurrence. The statistical picture of early cervical cancer shows a marked reduction in five-year mortality.

EARLY
MORTALITY – CERVICAL CANCER
100% 50% 0%

In recent years, cancer of the lung has been diagnosed with increased frequency. A major bronchus is the site of about four fifths of all lung cancer. The early growth of this tumor takes place by some mucosal extension. At this stage, a preexisting cough becomes aggravated. Mucus becomes manifest and may well be stained with blood. This cough is all together too frequently interpreted by the patient or by his physician to be a cigarette cough or the result of a cold.

THIS FALSE SENSE OF SECURITY, OFTEN ABETTED BY SYMPTOMATIC TREATMENT, ACCOUNTS FOR THE TRAGIC DELAY OF ALMOST A YEAR BEFORE THE AVERAGE PATIENT IS HOSPITALIZED.

Meanwhile, because of the delay, continued growth of the tumor intraluminally results in bronchiole obstruction and resultant emphysema or atelectasis with a likelihood of superimposed secondary infection. Extraluminally, the cancer invades the lung peripherally and extends toward the pleura.
This is the picture of disease which the average patient presents at thoracotomy.
About half of these patients, considered operable, are candidates for a pneumonectomy. However, the delay is to be reckoned with, in metastases to lymph nodes such as peribronchial, paratracheal, mediastinal and abdominal, together with blood born spread to the other lung, to the bones and other organs. Within five years, three fourths of these treated patients will be dead. Because of this insidious clinical behavior, lung cancer is one of our gravest cancer problems. Since early lung cancer provides little or no sign of its presence, the detection of this disease by clinical means is one of the physicians' most difficult task. On the other hand, a chest X-ray may provide a simple effective method of disclosing lung cancer in its earlier stages. Such an X-ray should be made on all cases with persistent cough. Nor should the history of a cold or a smoker's cough preclude the search for underlying cancer.

EARLY SUSPICION
ACCURATE DIAGNOSIS
EFFECTIVE TREATMENT

In recent years, the advances of thoracic surgery have made thoracotomy a safe operative procedure. In some cases, this technique may be the only method of establishing the diagnosis. Careful palpation of the chest wall for evidence of disease is the first step in exploration. If no extension is found, and the tumor appears to be confined entirely to the lung, a pneumonectomy can offer this patient a good chance of survival. Closure of the bronchial stump is carried out simultaneously with the amputation of the bronchus. Except in rare instances, lobectomy has no place in the surgery of lung cancer. Only by total removal of the lung can cancer of this organ be treated effectively enough to dim the danger of recurrence. The benefit in such early management is a fully worthy effort.

MORTALITY – LUNG CANCER
100 % 50 % 0 %

EARLY
MORTALITY – LUNG CANCER
100 % 50 % 0 %

MORTALITY – AVERAGE CASES
BREAST – CERVIX – STOMACH – RECTUM – LUNG

Mortality of average cases, all cases, of these five sites is high. But in early cases, early suspicion, accurate diagnosis and effective treatment have brought about marked reductions in mortality.
What is true of these five sites is equally true of other sites of this disease.

Our knowledge of cancer has grown tremendously in recent years. And the quest for of additional knowledge is going on constantly in many fields of study. In chemotherapy, hormones, radioactivity, carcinogenesis, virus research, genetics, and a long numerous other avenues of approach. In one day to come, the result of this ever increasing knowledge will lead us to the final answer to the cancer problem. However, the immediate problem, the cancer patient today, must be answered here and now and by the man who has always borne the first responsibility for cancer detection: the family physician.

THE END
Produced by AUDIO PRODUCTIONS, INC.
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THIS BRIEF PRESENTATION OF THE PROBLEM OF EARLY DIAGNOSIS IS ONLY THE BEGINNING.
SUBSEQUENT FILMS IN THIS SERIES WILL PRESENT DETAILS OF DIAGNOSIS OF CANCER BY SPECIFIC BODY SITES.