H8001

CANCER OF THE PLEURA IN CONJUNCTION WITH LUNG ASBESTOSIS MORPHOLOGICALLY PROVEN IN VIVO

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NORDMANN was the first to give expression to his opinion about the cancer of the lung in asbestos workers, assessing that we are dealing here with a job-related cancer. He arrived at this conclusion on the basis of two observations of his own and four further cases from the Anglo-American literature. According to NORDMANN approximately one-fifth of all cases of asbestosis which had been dissected up to the year 1938 had a carcinoma of the lung, in most cases of the type of the callous-forming cancer of the tesselated epithelium, in other words metaplastic and, in several cases, multiple in addition. In 1940 NORDMANN and SORGE succeeded in experiments with mice in the generation of new epithelial formations [metaplasia] of all stages up to the callous-forming, multicentrical cancer of the tesselated epithelium of the bronchi, the latter observed in one-fifth of the surviving mice. This experiment was effected by making the mice breathe air which contained asbestos dust, over a time period of 6 to 13 weeks. With

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these results the causal connection between asbestosis of the lung and cancer of the lung was made so likely that it [cancer of the lung] was accepted as a job-related disease in List No. 18b in the 44th decree about the extension of accident insurance to [cover] job-related diseases from the 29th of January, 1943. Further observations concerning this matter were later published by WEDLER and LINZBACH, BOHNE and WELZ. To our knowledge there had been dissected 31 cases of asbestosis in Germany until the last comprehensive publication of WEDLER in 1947. Among these cases were found six instances of cancer of the lung, which is approximately one fifth. Besides this, however, there were found two malign growths of the pleura; neither of these was published (cited according to WEDLER. Case 1, TEUTSCHLAENDER: "Pseudoalveolar Mesothelium of the Pleura with Metastases;" Case 2, ALWENS, FISCHER-WASELS, WEDLER: "Cancer of the Pleura.") This latter fact gives rise to the assumption that cancer of the pleura represents a special form of the job-related cancer of the asbestos workers, besides the cancer of the lung proper, that is to say, the carcinoma of the bronchi with the peculiar properties mentioned above. However, this is not mentioned by KOELSCH in his publications, which can probably find its explanation in the fact that the two cases mentioned above had not been published.

At present we have just been able to observe a case of

cancer of the pleura along with asbestosis of the lung, where it was possible to secure the diagnosis in all aspects morphologically in vivo. In the last years we have developed a tactic and technique of diagnostic measures for anatomically securing the diagnosis of the cancer of the pleura in vivo. It has proved successful also in the regard of proving the existence of bodies of asbestosis in the tissue of the tumor and thus is relevant to an assessment of the question of a connection [between asbestosis and cancer]. (Lit. cf.)

The 62 year-old tackle-maker O.H. was transferred from another hospital to our x-ray department for treatment by irradiation. A malignant tumor of the pleura was suspected. I was called in by the X-Ray Department in order to secure the diagnosis in regard to the kind and the extent of the disease, by means of thorascopy and possibly excising of samples.

In his history no serious diseases could be found to have occurred in earlier times. Nine years ago he had undergone an operation for inguinal hernia on both sides; eight years ago he had had an accident resulting in a concussion of the brain and fractures of the lower legs on both sides. Since his youth he had had a delicate stomach with a tendency to heartburn and a feeling of pressure in the stomach region, especially with an empty stomach.

For the last 8 to 9 months he had complained of pains

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in the upper stomach especially while coughing and sneezing. His family doctor treated it as a disease of the gall bladder. He complained of an increasing feeling of weakness along with nausea, occasional vomiting with a bitter taste. In the last 8 months he had suffered a weight loss of about 7 to 8 kilograms.

Medical findings: With the discounting of an old duodenal ulcer, there is no finding of a disease outside the thorax that could be established either clinically or by x-rays. His height is 168cm, his weight 58kg, the blood pressure 150/90mmHg. Blood sedimentation rate: 70/97mm. Hemoglobin 103 percent. Erythrocytes 5.2 mill., 18.600 leukocytes, out of these 1 percent baso., 1 percent stabk., 58 percent segm., 36 percent lymphocytes, 4 percent mono. The urine was chemically and microscopically without findings.

The right half of the thorax is a little retarded in the act of breathing. In all other aspects the thorax is symmetrical. We have the typical physical findings of a larger effusion of the right pleura.

Findings of X-Rays taken upon Admission: (Dr. med. habil. Pfeifer): There is an effusion of medium size covering the pleura on the right side extending to the interlobes with the thickness throughout of a little finger. No displacement. At the left side the pleura is pasted up.

For the radiological presentation of the pleura

visceralis and parietalis we are using our method which has been proven successful. In the case that the split of the pleura is free the effusion is tapped and drained maximally. A pneumothorax is established. Already TESCHENDORF and P.G. SCHMIDT have recommended this procedure. During this and afterwards the patient did not have any complaints. The total amount of the effusion was two liters. Its color was yellow. After it cooled down it gelatinized in a peculiar way. In the sediment were found tumor cells.

Afterwards X-Rays of the Thorax: The right lower and middle lobe has collapsed to the size of a goose's egg, the upper lobe has collapsed to the size of a fist. Pleura costalis is scarcely swollen. Pleura pulmonalis has clearly thickened, extending over the medium and lower lobe. Nodular formations or nodes could not be ascertained. It is not possible to diagnose a tumor of the pleura by means of x-rays.

The pictures of the fields of the lung show an increased net-like structure and small spotty shadows in both middle and lower fields. The latter had already been noted in the hospital from which the patient was transferred. The latter raised suspicion of pneumoconiosis after a specific etiology could be excluded. There was no indication of silicosis. However, the anamnesis in regard to his job, indicates asbestosis.

From 1920 until 1935 the patient was employed in executing by

himself isolation work on pipings and valve groups at the marine shipyard; later (until 1942) he supervised such work. Even during his work as a supervisor he spent daily some one and a half hours in rooms with asbestos dust.

In the sparse sputum of the morning, which is conspicuously glassy and tough, bodies of asbestosis could be demonstrated.

To reach a further diagnostic clarification I have carried out a thoroscopy of the right chest cavity. There I found the right diaphragm white as porcelain and glazed. There was no doubt it was calloused and thickened. In the front angle of the diaphragm and ribs, near the mediastinum, one can discern a tumor node of approximately the sixe of a plum. Besides it is another one which is approximately of the size of a pea and irregular in form, however, it has a smooth surface. From this several excisions have been made. The pleura parietalis appears thickened over the ribs to the whole extent of the chest cavity and shows a relief of small node lumps which appear to be gleaming with a whitish color in some places. The pleura visceralis has thickened moderately over the middle and lower lobe. On it one can see fine, wart-shaped, rather soft elevations. From the pleura visceralis excisions are made in various places. A smooth healing of the wound takes place.

Histological Findings from the Excised Materials:

(Professor FRANZ, Hamburg-Eppendorf):

(a) Sample excision from the pleura parietalis:
Piece of faulty connective tissue having large growth cells in a loose formation. At the periphery we find inflamed infiltrations of small cells. Besides this we find coagulated masses interspersed with fibrin. They contain the same growth cells: malignant blastoma.

(b) Sample excision from the pleura visceralis:
Tissue parts from growth cells. Between them are particles of asbestos.

(a and b) Malignant blastoma and asbestos particles. The appearance of the cells of the malignant blastoma suggests a pleuraendothelium as being very likely.

In this case our special method of a diagnostic procedure did not only provide the radiotherapist with definite information as to the kind, extent and modus of growth of the tumor so that he might use these for his planning of a therapy, but it has also led to a proof of the presence of asbestos particles in vivo.

The investigations carried out by NORDMANN involving dissections and experiments with animals proved the following to be the results of asbestos being in the tissue: hyperplasias, metaplasias, and finally carcinomas, most of the time being of multiple origination. The cancer of the pleura, too, originates possibly multicentrically in the

same side of the thorax. We believe that we cannot exclude this fact entirely, considering our bioptic findings in a total of ten cases in the last three years. We have practically always found, even in the relatively early stages, that the entire pleura visceralis and parietalis of at least one-half of the thorax was affected. Owing to this fact, a surgical treatment of these growths is almost always without much hope. The asbestos crystals, which, as is widely known, also pierce the pleura, form the chronic carcinogenic stimulus which leads to cancer usually only after a longer period of time--according to NORDMANN, 15 to 21 years after the beginning of the work with asbestos. In our case the time span between the proof of the existence of cancer and the beginning of work with asbestos was longer, 31 years; however, the exposition to asbestos dust had had a total duration of 22 years and it had been especially intensive in the first 15 years of this duration.

The cancer of the pleura is considered to be rare. However, considering the fact that up until the year 1947 there have been observed two cases of this rare cancer of the pleura along with asbestosis of the lung, besides six cases of the far more frequent cancer of the bronchus, one has a justified reason to assume a likely causal connection between cancer of the pleura and asbestosis. We can add to these findings our [above] case, so that we would like to

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regard the cancer of the pleura as almost certainly a secured special form of the asbestos-related cancers. In the case in question, its proof of this in vivo had not only a great potential for use in the radiation therapy but it was also of great benefit to the patient himself, who was able to enjoy the compensation for his job-related disease still within his lifetime.

SUMMARY

To the best of our knowledge this is the first description of a case of asbestosis of the lung along with the cancer of the pleura. A thoroscopy and a sample excision from the pleura in vivo led to the diagnosis of tumor tissue containing particles of asbestos. It has been possible to prove that it is justified to regard cancer of the pleura as a special form of the job-related cancer of the asbestos workers.