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PULMONARY ASBESTOSIS

EXCERPTS FROM VARIOUS MEDICAL JOURNALS

ON

PULMONARY ASBESTOSIS

MEMO REPORT 1/22

March 21, 1930
Market Analysis Section
Sales Promotion Department
Johns-Manville Corporation

FOREWORD

A few scattered articles have appeared in medical journals in recent years concerning occupational disease of asbestos workers noticed of late. A thorough study and diagnosis apparently has not yet been made as the disease has not previously been generally recognized.

Excerpts of articles on this disease were taken from medical journals in the Medical Library at Fifth Avenue and 103rd Street and are presented in this report.

EXCERPTS FROM VARIOUS MEDICAL JOURNALS

ON

PULMONARY ASBESTOSIS

Canadian Medical Association Journal
Feb. 1929 - Page 153

Pedley, Frank G. - Pulmonary Asbestosis

Mortality and nobility records of asbestos workers are not available. Information as to the effect of such work on the worker is extremely limited.

Death of an asbestos worker which occurred in 1899 was reported by Dr. Murray in England to the Department of Industrial Diseases and the evidence suggested that the death was due to an occupational disease.(Start of study)

Asbestos is essentially a magnesium silicate. The Canadian asbestos is said to contain about 41% silica and ..5% iron oxide.

Clinically, asbestos affects two tissues. First, it may produce small hard growths in the skin - the so-called "asbestos corns". Secondly, it may give rise to a fibrosis of the lungs, somewhat similar to that produced by silica. Investigation of "asbestos corns" indicates that they are granulomatous in nature and have for their core a tiny spicule of asbestos fibre.

It is believed that silica is necessary to the formation of pulmonary fibrosis. At present this cannot be disproved by the occurrence of pulmonary asbestosis, since asbestos itself is a silicate. No analysis has been made of pulmonary tissue for silica in cases of asbestosis.

It might be thought that lesion in this condition was essentially the same as that of ordinary silicosis, if it were not for the fact that certain very characteristic bodies are reported unlike those seen in any other pathological picture. Reference to the so-called "curious bodies". Microscopic sections of lungs of asbestos workers show large elongated bodies varying in length

from 10 to 100 microns. They may have single clubbed ends or may appear as elongated dumb bells, and sometimes single coccal or streptococcal forms are seen. They do not stain with ordinary aniline dyes, but are themselves pale yellow or yellowish brown. Apparently they are composed of a central core, which is probably an asbestos spicule, upon which colloidal aggregates of blood proteins have been absorbed.

Since the reported cases of this disease have occurred largely among spinners and weavers, it is possible that the mining and crushing of asbestos does not present a hazard. The failure to recognize the disease in Canada, however, is no evidence of this, for in other occupations experience has shown that large groups of men suffer serious occupational effects which go unrecognized for years.

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Bulletin of Hygiene - London - Dec. 1929
V. 4, #12 Page 978

Abstract - Gloyne, H. Woodhouse

(Wood, W.B., Pulmonary Asbestosis. Radiographic Appearances in Skiagrams of the Chest of Workers in Asbestos. Tubercle. 1929, V. 10: 55.-66; 12 figures on 6 pls.: 12 ref.)

The cardinal symptom of pulmonary asbestosis, like that of other forms of silicosis, is dyspnoea, which progresses until in the advanced stages of the disease, it becomes extreme. The dyspnoea may be accompanied by cyanosis and the complexion of most patients has a slightly leaden hue. Chest expansion may be reduced to one inch or less. Cough is seldom excessive and expectoration is moderate in amount or even absent.

The physical signs are those of a bilateral pulmonary fibrosis chiefly affecting the lung bases. Pulmonary tuberculosis may supervene or modify the clinical picture. When the disease is well established the prognosis appears to be grave.

Post mortem, the diagnostic feature which serves to distinguish the condition from other forms of pneumoconiosis is the presence in the lungs of golden yellow foreign bodies with

segmented outline and clubbed extremities bearing a superficial resemblance to minute crustacean forms.

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British Medical Journal - Sept. 28, 1929
(P. 578)

Cooke, W.E. - M.D.; F.R.C.P.Ed.; M.R.C.P. London.; D.P.H.
Asbestos Dust and the Curious Bodies Found
in Pulmonary Asbestosis

A scientific treatment of the analysis of the bodies found. Just some outstanding extracts taken.

I have mentioned that the greater portion of asbestos dust consists of slender translucent fibres. In sections and extracts of lungs there is a remarkable paucity of these fine spicules. The end-results of digestion show the fine granular dust, and the large black, blue, and brown particles, and what appears to be pieces of quartz. Relatively few fine spicules are found, but curious bodies of all descriptions are present in enormous numbers.

All these facts lead us to imagine the bodies to consist of central nuclei of asbestos spicules upon which colloidal aggregates of blood proteins, plus, possibly, soluble fractions of asbestos, and in the case of chrysotile workers an iron salt, have been absorbed and moulded by currents in the bronchi and alveoli.

Occasionally biotite fragments into fine black spicules, and if our reasoning be correct, some at least of the millions of curious bodies should show a central core of this mineral.

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British Medical Journal - Sept. 28, 1929

Haddow, A.C. - M.D.; Ch.B.

Clinical Aspects of Pulmonary Asbestosis

A clinical and scientific study of specific cases of this disease.

Examination of some fifteen asbestos workers.

Significant extracts taken.

Of these four fatal cases, the average at death was 41, and the average years actually spent in the factory were under 20, all in asbestos-mattress making for most of the time. The male patient had worked until two days before death (on a light job) but the other three had been incapacitated for an average of two and one-half years (3yrs., 5 mos.; 2 yrs., 5 mos.; 1 yr., 10 mos.). Only in one of them had tubercle bacilli been found in the sputum.

Advanced Cases

In practice, these workers do not call for much attention until they reach the stage of total incapacity. Until then they are naturally more prone to chest troubles during the winter months and sometimes unfit for weeks at a time.

Clinically

Four women
- Average - 35 years of age
- " 14 years spent in factory
- " 3 children apiece (Children all healthy)
- Suffer from shortness of breath
- Have cough without expectoration
- Lean, although not losing in weight
- Pain is variable, and occurs from time to time with localized pleurisy
- Nightsweats absent
- Has been no haemoptysis
- No tubercle bacilli have been found
- Heart normal - Pulse rate 90 at rest
- Average full range of chest expansion is only one inch in the upper thorax and even less around lower ribs.

Onset of symptoms

It is very difficult to ascertain the date of onset of symptoms, but the patients generally believe it was after five years of work.

Conclusions

The following conclusions have been established.

1. That the inhalation of asbestos dust will in the long run produce a state of fibrosis, the distribution being peripheral and basal, the right base becoming more advanced and the upper lobes tending to develop compensatory emphysema as first the diaphragmatic and gradually the entire pleural surfaces become