SILICOSIS

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THE Indian Express dated November 1, 1979, reported that the Government of Madhya Pradesh was planning to make legal provision for compulsory installation of a recently developed machine for cutting stones and a pneumatic system, in the State pencil units of Madsour, which will eliminate 95% of silica dust from the atmosphere. Earlier the Indian Express had reported on the death of 2,000 workers due to silicosis in the last two decades.

Health depends upon many conflicting factors such as the genetic constitution of a man or on the physical and psychological circumstances under which he grows. It also depends on a man's work. The social aspects of a nurse's work today is linked closely with the positive promotion of health and prevention of diseases and so knowledge of occupational diseases will be helpful for the nurses.

A group of lung diseases resulting from the inhalation of dust in various trades are called pneumoconioses. Some of the dusts produce serious lung disease, others are less harmful and some are bening. Particles of 5 microns in diameter or less can reach the alveoli of the lungs.

Silicosis is the most important disease of this group and it is defined as a pathalogical condition of the lungs due to the inhalation of dust containing free or uncombined silica (silicon dioxide). It is important to distinguish between silica in the free state and in the combined state as various silicatics. Dusts other than uncombined silica produce pneumoconioses but these do not present the characters which are possessed by silicosis in its typical form.

Silicosis is prevalent in many industries, and f all the pneumoconioses it claims the largest victims, either alone or with tuberculosis with which it is frequently allied. Occupations in which silicosis occurs are sandstone industry, granite industry, pottery industry, tinnining, iron-ore mining, coal mining, the slate quarrying and dressing industry, grinding of metals, iron and steel foundries, flint crushing, silica milling, maufacture of abrasive soaps ad sand blasting. The workers which are prone to this disease are, rock getters who work at the stone face in a mine or stone cutters, masons who shape and carve the stone to dimentions and planners, sawyers and turners who operate cutting machines drillers with pneumatic hand tools, etc.

Signs and Symptoms

Silicosis is generally devided into three stages, slight, moderate and severe degrees. In the first stage symptoms appear in a workman who has been employed in an industrial process involving exposure to siliceous dust for a period of many years. The changes can occur from a few months after exposure to over sixty years. The onset of symptoms is marked by dyspnoea on exertion, slight at first and later increasing in severity. Throughout the illness dyspnoea remains the most important symptom. Slight cough unproductive or with scanty sputum may be present. At this stage the general condition and the working capacity of the patient is unimpaired or slightly impaired. There is no alteration of breath sounds and there are no added sounds. Diminished expansion of chest is scarce, if at all present. Radiograph will show presence of discrete nodular shadows, circular and at the most 2 mm in diameter.

In the second stage dysponoea and cough becomes established. There is diminished expansion of the chest, patchy dullness with bronchial breath sounds and scattered rhonchi. There is always some degree of impairment of working capacity. Radiograph at this stage will show that the whole of both lung fields are occupied by nodular shadows.

In the third stage dyspnoea leads to total incapacity. Right heart hypertrophy and then failure may supervene. The radiograph will indicate areas of massive consolidation. Pulmonary tuberculosis may be present in any stage of silicosis and it may alter symptoms, physical signs,

radiographic appearances and the whole course of the disease.

At necropsy lungs are found large and pleural adhesions are present. Cut surface of the lung shows excess of pigmentation throughout, but the striking and distinctive feature is the presence of numerous round nodules black or grey in colour. Each nodule is 2 to 5 mm in diameter or may be united in a massive fibrosis.

Prevention of Silicosis

1. **Dust Supression or Control:** The best way to prevent the disease, it is clear that harmful dust must not get into the air which people breathe. But this is difficult because many factory and mining processes are dusty. Nevertheless dust clouds can be controlled partially and sometimes completely. Practical details of dust control are in the domain of engineers, but it is the duty of the doctors and industrial nurses to inspire the engineers. Sometimes the process can be altered so that no dust is formed. To control dust, general ventilation must be adequate. Local exhaust ventilation combined with enclosure of the process may be necessary in certain areas. Isolating the dusty process from other areas of factory to reduce the number of people exposed can be done. Water, Foam and Oil may be used for allaying dust in certain mining industry. Wet drilling is widely used in many countries. New methods of dust control by water are devised from time to time. But it must be remembered that water is not as efficient as exhaust ventilation in controlling dust. Factory should be tidy and cleared at regular intervals. Accumulation of dust must be avoided. Vacuum cleaning should be practiced rather than sweeping.

2. **Replacement or Substitution:** Though it is not always practicable, the principle of replacing a harmful material by a less dangerous one must get the first preference in the prevention of the disease, e.g., limestone can be used for buildings instead of sandstone or granite. Suffering from silicosis can be avoided in that industry.

3. **Personal Protection:** Where it is found impossible to control the dust the worker must wear either a dust mask or an airline breathing apparatus. Dust respirators are most suitable for temporary use.

4. **Medical Examination:** Initial examination of applicants for employment to prevent people whose respiratory physique is defective from entering into this industry and periodical examination to detect silicosis at an early date must be carried out.

5. **Health Education:** Education of the workers on the prevention of the disease is the most important job of an Industrial Nurse.

Reference

Hunter, Donald, 'Health in Industry', 1959, First Edition, Penguin Books.

ATTENTION

S.N.A. Unit Members, Tutors and S.N.A. Advisors

In accordance with a recent decision of the Council of T.N.A.I., it is hereby informed to members that the membership at concessional rate of Rs. 15 as is admissible to the Student Nurses joining T.N.A.I. within six months of their passing the examinations, is being withdrawn from 1.1.1980, it is noticed that majority of such members do not renew their membership when falls due in the subsequent year, and thus, it becomes uneconomical to continue with the concessional rate.

However, in case, such member opts for Life Membership within six month of passing the examinations, she/he is entitled to become a Life Member at a concessional rate of Rs. 200 instead of a normal rate of Rs. 250.

We expects that the members will appreciate the difficulties, and would utilise the opportunity for the concessional rate in life membership to the maximum, and thus help your Association.

Secretary, TNAI.

Please Note Address of Secretary, Haryana Branch, TNAI;
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