ABSTRACTS

INDUSTRIAL TOXICOLOGY


The addition of cyanide ions to a solution of vitamin B₁₂a (hydroxocobalamin) results in the formation of cyanide ions. The cyanide group is tightly bound to the cobalt atom and the process is apparently irreversible, for vitamin B₁₂ is non-toxic to mice even when given in doses up to 1,600 mg. per kg. body weight intravenously and intraperitoneally, a dose which contains the equivalent of 32 mg. of cyanide ion per kg., which is about 8 times the LD₁₀₀ dose. These observations suggest that vitamin B₁₂a might be of value as an antidote to cyanide, and this has been confirmed by the authors in a series of experiments on mice carried out at the Merck Institute, Rahway, New Jersey, in which it was shown that vitamin B₁₂a, administered intravenously, is capable both of preventing and of reversing the effects of the intraperitoneal injection of aqueous solutions of potassium cyanide.

For prophylaxis, a dose of 50 or 250 mg. of vitamin B₁₂a per kg. given 20 seconds before the cyanide injection gave adequate protection against doses of 5-6 to 8-0 mg. per kg. In treatment an intravenous dose of 250 mg. of vitamin B₁₂a per kg. given within one or two minutes, or of 100 mg. per kg. within one minute, of the intraperitoneal injection of 10 mg. of potassium cyanide per kg. (a lethal dose) caused the immediate disappearance of respiratory distress and convulsions and prevented death. Given 6 to 8 minutes after the injection of potassium cyanide, vitamin B₁₂a was ineffectual. However, mice "apparently dead" of cyanide poisoning reacted dramatically to the injection of vitamin B₁₂a within 2 to 3½ minutes of the cyanide injection, 7 out of 21 recovering.

In a study of the metabolism of cyanide and vitamin B₁₂, each of 6 mice was poisoned by the intraperitoneal injection of 10 mg. of potassium cyanide per kg., and approximately one minute later each was given an intravenous injection of 100 mg. of vitamin B₁₂a per kg. The urine was collected during the next 2½ hours and it was found that 9.6% of the cyanide given was excreted in the urine during this period in the form of cyanocobalamin, 0.7% as free cyanide, and 3.5% as thiocyanate.

M. A. Dobbin Crawford.

INDUSTRIAL LUNG DISEASES


In this paper from the General Hospital and University of Toronto the author describes 8 cases in which radiological abnormalities showing collapse with consolidation of one or more pulmonary segments suggested the diagnosis of bronchial carcinoma. The patients had all had a recent illness with increased cough and sputum and, in 4 cases, haemoptysis. In one there was a definite history of silicosis, and the diagnosis of conglomrate silicosis was made. In the other 7 patients, despite negative results on bronchoscopy, thoracotomy was carried out, with pneumonectomy in 4 cases, lobotomy in 1, and biopsy alone in the other. In every case the pathological findings confirmed the presence of silicosis (with added tuberculosis in 2 cases). Enlarged silicotic hilar lymph nodes had apparently resulted in secondary chronic pneumonitis as a result of atelectasis in one or more segments of the lung. In 3 of the cases subjected to pneumonectomy pathological examination revealed discrete silicotic nodules throughout the lung despite the absence of nodular shadows in the radiograph. The patients' recent symptoms were relieved after operation, but shortness of breath appears to have been increased.

The author concludes that in these cases it is impossible to reach a preoperative diagnosis of silicosis, so that thoracotomy is necessary. Because of the extensive fibrosis, lobectomy is seldom possible and pneumonectomy has to be carried out.

(The chief interest of this paper is the demonstration of the development of a silicotic type of fibrosis as a result of non-specific infection in atelectatic pulmonary segments. The tuberculous infection in 2 cases was thought to be secondary. The merits of resection, once the diagnosis has been made at thoracotomy, are not clearly established.)

C. M. Fletcher.

In this paper from the Institute of Social Medicine, Oxford, the author discusses methods of correlating age and disease, and points out that to base this correlation on one calendar year conveys a misleading impression and that it is statistically sounder to base it on a study by cohort or generation.

From the annual number of female births in England and Wales for the period 1851–1922 and the female deaths for the period 1851–1938, the probability was calculated of a female aged 0, 5, 10, 15, 20, 25, 30, or 35 years, born in a particular triennial period, dying within 5 years from pulmonary tuberculosis. In addition, life-tables were constructed showing the number of females born in successive triennial periods from 1851–1922 who survived to adult age. Of those born in the first period, 1851–3 (that is, Cohort 1), 68% reached the age of 25 and 59% reached 45. There was a steady improvement up to Cohort 11 (1881–3) when the figures were 75% and 70% respectively. There was no improvement for the next five cohorts (1884–98), after which there was again a steady rise. This stationary period is attributed, in the main, to the heavy mortality from epidemic diarrhoea among children at this epoch and secondarily to the effect of the first world war and the influenza epidemic of 1918–19. For Cohort 1, of each 1,000 females born, 100 died from phthisis before the age of 45, of whom 47 died under the age of 25. For Cohort 11 (30 years later), the figures were 41 and 18 respectively, showing that progress has been made in the reduction of the mortality from pulmonary tuberculosis.

Tables giving the probability of dying within 5 years from pulmonary tuberculosis at a given age and cohort show that the age of maximum mortality was 20, tending towards age 25, in the period 1851–77 (Cohorts 1 to 9); for the next 15 years it rose higher until 1892 (Cohort 14), after which it then reverted to age 20 and in 1912–14 was tending towards age 15. Correlation coefficients were calculated in pairs between (1) the probability of dying within 15 years after birth from all causes other than phthisis (that is, “childhood environment”), (2) the probability of dying within 15 years after birth from any form of tuberculosis (that is, childhood tuberculous infection), (3) the probability of dying within 5 years from all causes except phthisis, at ages 15, 20, 25, 30, and 35 (that is, “adult environment”), and (4) the probability of dying within 5 years from phthisis at ages 15, 20, 25, 30, and 35 (that is, the observed mortality from phthisis).

These calculations show that the mortality from phthisis of any female generation below 25 is related to the childhood environment. For the survivors beyond 25 the adult environment is the important factor. There is no evidence of any association between childhood infection and the mortality from phthisis in young adults. **M. Lubran.**

**GENERAL**


In this short paper from the Falkland Islands the author reviews some of the literature on erysipeloid (Baker–Rosenbach) and discusses his experience of hand infections in workers in the whaling and sealing industries in South Georgia, the Falkland Islands, and in the Antarctic.

The terms “whale finger” and “seal finger” are used locally to describe the infective lesions which occur as occupational hazards. In the whaling industry most hand infections are digital and are caused by minor cuts and abrasions from the handling of frayed steel ropes to which cling fragments of whale meat. Among sealers infections develop following cuts from the knife used in dealing with carcasses.

The author analyses 66 cases of infection of the hands, chiefly following lesions on the volar surface of the index and middle fingers, which were seen between April, 1950, and March, 1951. Of 60 cases among whalers, 41 were of cellulitis and 9 of erysipeloid, while of 6 cases in sealers 2 were of erysipeloid. In 3 instances cellulitis and erysipeloid were found in the same patient. The author believes that there would have been further cases of erysipeloid if cellulitis had not been promptly treated when it occurred.

From observation in 4 cases the incubation period for erysipeloid was considered to be 2 to 3 days. No spread to other fingers was observed, nor was any generalized or intestinal form of erysipeloid seen. One case was complicated by cutaneous lymphadenitis and one by septic arthritis. The author’s facilities for bacteriological investigation were very limited; in no case was *Erysipelothrix rhusiopathiae* isolated.

Treatment in early cases consisted in immobilization and local application of 30% mercury ointment, penicillin being reserved for cases with complications.

**Benjamin Schwartz.**

**Special Seating for Workers with Disabilities of the Lower Limbs. TALITSKY, B. N. (1952). Gigiena, 31, No. 12.**

The author points out that fatigue and waste of energy are caused when workers perform their tasks in awkward and uncomfortable positions, and gives examples of special seats designed for disabled workers with deformities of the lower limbs, including persons with amputation through the thigh and knee and those with anklyosed joints. These seats can be adjusted to suit the individual and enable him to work in the most convenient and comfortable position.

(A study of the original article is recommended to those who are interested in such problems, as the designs can only be understood by reference to the photographs and diagrams reproduced.) **L. Firman-Edwards.**