Graph showing percentage of each ponderal index.

Sällström, 1945)—and lid lag—2 : 1 in this series—may also offer a partial explanation.

Other Findings.—The occurrence of 28 cases of greatly enlarged non-toxic thyroid glands in subjects resident in Birmingham puts the approximate rate of simple goitre in this city at 5.6%. It was noted that 125 people preferred cold weather, 273 hot weather, and the remainder were indifferent. All subjects under 20 preferred the heat. Therefore only in young people can preference for cold weather be considered an important diagnostic feature in borderline hyperthyroidism, unless there has been a recent change in preference.

Assertions of excessive sweating were not uncommon, but revealed nothing of particular interest. The very fine rapid tremor generally considered characteristic of hyperthyroidism was found 11 times.

Mechanism of Lid Lag

Von Graefe (1864) believed that the cause of his sign was a disturbance of lid musculature, probably affecting Müller's muscle through the sympathetic system. He observed that morphine abolished the sign. Pochin (1939) believed that the lid retraction (usually combined with lid lag) in Graves's disease was associated with spasm of the levator palpebrae superioris and not with affection of the involuntary muscle. Joll (1932) considered that lid lag was often a "mechanical consequence of forward displacement," but this cannot explain its occurrence in normal people. The observations reported above do little to elucidate the mechanism of the lagging, but suggest that it is more common in thin people.

Summary

The examination of 600 subjects demonstrated the frequency of lid lag, apart from its hyperthyroid connexions. The incidence of certain other signs characteristically occurring in thyrotoxicosis was also estimated in this series. It seems that lid lag is particularly common in people suffering from peptic ulcer, and so cannot be of help in the diagnosis of mild degrees of hyperthyroidism in patients with ulcer.

STATISTICAL NOTE

(1) The male sex preponderance is very highly significant, the difference between proportions being ten times the standard error.

(2) The high incidence of lid lag in peptic ulcer subjects is also significant. The differences between percentages is three times the standard error.

(3) The difference between the mean P.I. of ulcer cases and of the control series and between lid lag cases and controls is over three times the standard error in each instance. The apparent high frequency of lid lag in thin people and in ulcer subjects is thus highly significant.

I should like to thank Mr. Kelman, the medical superintendent, for permission to investigate patients at Selly Oak Hospital.

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ACTINOMYCOTIC EMPYEMA

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Massive empyema due to actinomycosis is uncommon enough to warrant description of a case. Price (1941) states that the empyema is rarely large and the primary lesion seldom pleural. Until recently the prognosis was regarded as unfavourable, death resulting from exhaustion and toxæmia. Penicillin therapy, however, has given promising results in cases cited by Hamilton and Kirkpatrick (1945) and others in this country, and by American authors.

The following case is of interest because a total dosage of over 25,000,000 units of penicillin extending over a period of 56 days was necessary to overcome the infection. Repeated aspirations were necessary owing to the encysted nature of the empyema.

Case History

A carter aged 49 was seen by me in consultation with his own doctor on February 12, 1949. He gave a history of sudden onset of right-sided chest pain and rigors on December 22, 1948. After a few days in bed he resumed his normal activities but did not feel well. On January 29, 1949, the pain returned accompanied by cough and feverishness. His doctor suspected a pleural effusion, but was unable to obtain fluid from the pleural cavity. The temperature was remittent and the dullness increased in spite of treatment with sulphamezathine. The patient had frequent profuse sweats, looked toxic, and had lost weight.

I found him to be moderately dyspnoeic. His pulse rate was 84, regular, and of good volume; respirations, 28; temperature, 101.3° F. (38.5° C.). The apex beat was in the fifth interspace outside the nipple line. His blood pressure was 140/75 mm. Some clubbing of the fingers was present. Examination of the chest showed well-marked signs of a pleural effusion, with stony dullness extending from the base of the right lung to the third interspace posteriorly and forward to the anterior axillary line. B.S., V.F., and V.R. were greatly diminished. There was no bulging of the intercostal spaces. An area of paravertebral dullness was found on the opposite lung. The urine showed no abnormality.

On February 13 he was admitted to the Bolton Royal Infirmary. A radiograph revealed a massive pleural effusion of the right side of the chest, and 10 ml. of thin greenish foul-smelling pus was aspirated and sent to the pathology department. The patient was then put on penicillin, 250,000 units daily in three-hourly injections. On February 24, on receipt

of the pathological report, the dosage was increased to 500,000 units daily.

Pathological Report.—Greenish foul-smelling pus containing a moderate number of small yellow granules. Stained film: numerous pus cells, numerous fusiform bacilli, small Gram-negative coli and bacilli, a moderate number of clumps of filamentous organisms of fungal morphology. This specimen was referred to the Fungus Reference Laboratory, which reported that *Actinomyces israeli* was present.

On February 22, 2 pints (1.14 litres) of pus was aspirated and 100,000 units of penicillin injected. On February 24, 1 pint (570 ml.) was aspirated. A radiograph on February 28 still showed an encysted collection in the right mid-zone posteriorly. This was much thicker and more difficult to aspirate. Rib-resection was considered, but as the fluid was centred under the inferior angle of the scapula it was decided to continue to aspirate.

By March 12 the temperature finally settled. On the 14th a radiograph still showed some encysted fluid. Aspiration failed. On March 18, 6 oz. (170 ml.) of pus was aspirated after screening, and penicillin was injected. On April 8, 6 oz. of pus was aspirated and 100,000 units of penicillin injected.

Pathological Report of Pus.—On March 9:—Direct smear: numerous pus cells, very scanty Gram-negative bacilli, no actinomyces seen. Cultures: no growth on blood agar. On March 18:—Direct smear: numerous pus cells, no organisms. Culture (aerobic and anaerobic): no growth.

An x-ray report on April 12 stated that the fluid seemed to have cleared from the right side and had left some residual pleural thickening.

Other Investigations.—A blood count on February 14 showed: Hb, 68%; red cells, 4,435,000; colour index, 0.77; white cells, 14,000 (eosinophils 81.5%, basophils 0.5%, lymphocytes 11.5%, monocytes 6.5%). Sputum examination on February 17: *M. tuberculosis* not found; moderate number of pus cells, fairly numerous epithelial cells, a few "dust" cells; no malignant cells seen. Blood sedimentation rate on February 21: first hour, 118 mm.; second hour, 125 mm. (Westergren). Sputum on February 25: moderate number of pus cells, fairly numerous squamous cells, fairly numerous dust cells, no malignant cells; *M. tuberculosis* not found. Culture:—Mixed: haemolytic streptococci and *Neisseria catarrhalis*.

In addition to intramuscular penicillin (total dosage 25,000,000 units) and intrapleural penicillin (400,000 units) the patient received potassium iodide, 30 gr. (2 g.) thrice daily.

He was discharged home on April 18, having been ambulant for ten days. He had gained weight and looked and felt very well.

I am greatly indebted to Dr. G. Manning, pathologist; Dr. Brash, radiologist; and Dr. Dawson, resident medical officer, for their assistance in the investigation and treatment of this case.

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The American Heart Association is publishing a quarterly journal entitled *The American Heart*, the object being to obtain broader public understanding and support of the association's programme in the field of cardiovascular disease. Approximately \$700,000 has been allocated for heart research this year by the association and affiliated organizations. According to a report in the *New York Times* (September 13, 1949) the United States Public Health Service is also launching a nation-wide attack on heart disease. A programme involving expenditure amounting to over \$8,000,000 has been planned by the National Heart Institute. Among the subjects which are to be specially studied are: environmental and hereditary factors; dietary factors; new surgical methods; the usefulness of new drugs and new substances such as ACTH and cortisone; new diagnostic instruments such as the electrokymograph and the ballisto-cardiograph.

Medical Memoranda

Unusual Case of Nutritional Anaemia

The following case of nutritional anaemia is worthy of record because of the history.

CASE REPORT

A boy aged 9 was admitted to hospital on May 25, 1948, with a history of recurrent vomiting for six weeks. His previous medical history showed that he had been a full-time baby, born spontaneously after a normal pregnancy. He was the sixth of a family of seven, and all his siblings were healthy. From birth there had been a spastic paralysis of all his limbs; he had never been able to sit up and was completely helpless. Since birth his diet had consisted of milk. He refused to eat any other foods and would take his milk only from a feeding-bottle. His average daily consumption was about 5 pints (2.84 litres).

He had always tended to be constipated, but otherwise remained well until ten weeks before admission to hospital, when he had become unusually constipated and had had no bowel action for 25 days, at the end of which time he passed a very large constipated stool. Since then he had been less keen on sucking; he had often vomited after feeds, and his condition had steadily deteriorated.

On examination he was seen to be grossly mentally deficient, and was unable to speak. The skull was flattened posteriorly and there was a scoliosis of the dorsal spine. His temperature varied from 100 to 101° F. (37.8 to 38.3° C.); he was extremely pale and his face was puffy. His teeth were larger than normal, well spaced, and not carious. There was a spastic paralysis of all limbs, with permanent flexion of the elbow- and knee-joints due to contractures. Cardiac enlargement was not pronounced, but a loud blowing systolic murmur was heard all over the praecordium. A blood count showed: Hb, 8.5%; red cells, 1,020,000; C.I., 0.42; white cells, 11,400 (polymorphs 54%, basophils 1%, lymphocytes 38%, monocytes 7%). The red cells were severely microcytic and hypochromic. These figures were confirmed by the Department of Medicine, Aberdeen University. Plasma proteins were 7.7 g. %, with an albumin/globulin ratio of 1.24 to 1. A radiograph showed abnormally slender bones with delayed ossification and severe general decalcification.

The patient refused to take iron by mouth, and in view of this and the extreme degree of anaemia it was decided to give iron by intravenous injection. The preparation used was a saccharated oxide of iron, "ferrivenin" (Bengers), which contained 20 mg.

of iron per ml. Small doses of 1 ml. and then 1.5 ml. were given on consecutive days at the beginning of treatment, and thereafter 5 ml. on alternate days to a total of 42.5 ml. On the day after the third injection

the temperature rose to 104° F. (40° C.), but, despite this, the patient looked much better. One injection was omitted, and his temperature settled. He remained afebrile during the remainder of the treatment.

The haemoglobin and reticulocyte response to therapy are shown on the accompanying Chart. Within three weeks the haemoglobin was 70%, and he had been persuaded to increase the range of fluid feeds, but he still refused all solids. Iron and ammonium citrate in 10-gr. (0.65-g.) doses was thereafter given three times daily in bottle feeds.