found at the two examinations could not be decided owing to the small number of carriers.

TABLE II.—*Throat Carriers of Str. pyogenes Group A in Secretor and Non-secretor Military Recruits, at Enlistment and After One Month of Military Training*

Investigation	Total Series			Carriers of <i>Str. pyogenes</i> Group A		
	Total No.	Non-secretors		Total No.	Non-secretors	
		No.	%		No.	%
First	1,503	332	22.1	131	39	29.8
Second	1,495	317	21.2	175	45	25.7

Of 262 patients with mitral stenosis, 15.3% were non-secretors. Patients with other than mitral defects were excluded from this investigation. As these patients came from all over the Netherlands and some from abroad, we did not succeed in obtaining a matched control group. But since 15.3% is lower than the percentage of non-secretors in the sample from the village and from the military sample mentioned above, whereas Clarke *et al.* (1960) and Buckwalter *et al.* (1962) found a higher percentage of non-secretors in their patients, this could indicate a difference in the composition of the various groups of patients examined. To investigate this possibility we divided the patients with mitral stenosis into various subgroups.

The blood-group distribution of the mitral-stenosis patients showed an excess of blood group A (54.1%) and a shortage of blood group O (40.2%) compared with normal controls (42.9% for group A and 45.3% for group O as described by Nijenhuis (1961)). This relative shortage of group O and relative excess of group A in patients with rheumatic carditis was also shown in the investigations of Clarke *et al.* (1960) and Buckwalter *et al.* (1962). Since the secretor/non-secretor ratio is about the same for persons with group O as for those with group A (Clarke *et al.*, 1956), this excess of group A or shortage of group O cannot in itself explain the secretor/non-secretor ratio in the different groups of patients.

The degree of fibrosis in 170 cases and the degree of calcification of the mitral valves in 161 cases, as felt by the exploring finger at operation, were noted. All patients who had other defects besides their mitral stenosis were excluded from the group who were treated surgically for the latter.

The distribution of these findings over secretors and non-secretors is shown in Table III. These data strongly suggest that the greater the calcification and fibrosis the lower the percentage of non-secretors. However, because of the large number of patients on whom data on calcification (46) and on fibrosis (37) are missing, and of whom eight and four respectively were non-secretors, it is not possible to come to a definite conclusion with regard to the calcification. For fibrosis, however, the chance that the group with unknown fibrosis will make the difference insignificant at a 5% level is under 5%.

To our knowledge, investigations regarding the possible correlation of acute nephritis and secretor status have never

TABLE III.—*Condition of Mitral Valves Found During Commissurotomy for Mitral Stenosis in Secretor and Non-secretor Patients*

	Total No.	Non-secretors		P
		No.	%	
Calcified	55	4	7.3	<0.05
Non-calcified	106	23	21.7	
Fibrosis	130	16	12.3	<0.001
No fibrosis	40	15	37.5	

been reported in the literature. We therefore investigated 179 patients with this disease and 280 healthy school-children as controls: 43 (24.0%) of the patients and 66 (23.6%) of the controls were non-secretors. These preliminary figures do not indicate any real difference in the secretor/non-secretor ratio between our patients and our controls.

Summarizing, it seems possible that a non-secretor is not only liable to have *Str. pyogenes* group A in his throat more frequently, but when he develops a mitral stenosis there will be less tendency to fibrosis and calcification than in the secretor patient.

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Medical Memoranda

Agranulocytosis During Administration of "Atromid"

"Atromid," an I.C.I. preparation containing ethyl- α -p-chloro-phenoxy-isobutyrate (clofibrate), has recently been introduced as a means of lowering high levels of serum cholesterol and triglycerides in patients with atherosclerosis. The only side-effects reported have been nausea and abdominal discomfort in a small minority of patients, and a potentiating effect on anticoagulants (Oliver *et al.*, 1963). The case here described is of a patient on phenindione anticoagulant therapy who developed agranulocytosis during administration of atromid and in whom normal granulopoiesis returned after withdrawal of this drug.

CASE REPORT

A woman of 57 was admitted as an emergency case in May, 1963, with the history of a sudden onset of dyspnoea and chest pain radiating into the left arm. The past history was not noteworthy, but there was a family history of hypertension in both sides of the family. Myocardial infarction was confirmed on the E.C.G. and estimation of serum transaminase. Her haemoglobin was 14.2 g./100 ml., white cells 12,000 per c.mm. (neutrophils 90%, lymphocytes 10%), E.S.R. 44 mm./hour (Wintrobe), blood urea 25 mg./100 ml., serum cholesterol 325 mg./100 ml.

The patient was immediately anticoagulated with phenindione and sedated with phenobarbitone 30 mg. t.d.s. and butobarbitone 200 mg. o.n. In view of the family history and high serum cholesterol, four weeks after admission atromid 0.5 g. t.d.s. was administered. It was observed that the dosage of phenindione required to keep the prothrombin time within the therapeutic range was halved after atromid administration. Six days

after the commencement of atromid the patient developed a pyrexia. Later, crepitations became audible in the right lower chest; a portable chest x-ray film was taken and a diagnosis of basal pneumonia was made. Tetracycline (250 mg. q.i.d. for four days) and breathing exercises were followed by a decrease in the pyrexia on the 13th day of atromid therapy. The phenobarbitone was discontinued next day as the patient was feeling drowsy, but the butobarbitone at night was continued (see Chart). The temperature, however, rose again and after the temperature had been raised for another week she complained of a sore throat. At this time examination of the blood showed that

Tracing of the patient's temperature and pulse chart, together with the drugs administered. The third and fourth weeks have been foreshortened as the chart was uneventful. Examination of the peripheral blood at point X revealed agranulocytosis.

the haemoglobin was 12.7 g./100 ml. and the white cells numbered 4,200 c.mm., there being a complete absence of granulocytes; platelets were plentiful. The patient was given penicillin and atromid was discontinued; on the following day the haemoglobin was 12.9 g./100 ml. and the total white cells had fallen further to 1,900 per c.mm. with no granulocytes. On the third day after discontinuation of atromid there was a return of granulocytes in the peripheral blood, the total white cells being 2,000 per c.mm., of which 3% were granulocytes.

The white cell count gradually rose over the succeeding days, and on the ninth day after withdrawal of atromid the blood picture showed haemoglobin 12.2 g./100 ml., total white cells 6,900/c.mm. (66% neutrophils, 9% monocytes, 25% lymphocytes).

At the time of writing the patient was well and had a normal blood picture.

COMMENT

It seems likely that the agranulocytosis in this patient was due to a drug idiosyncrasy. At the time of the development of the pyrexia the patient was receiving butobarbitone, phenobarbitone, phenindione, and atromid. Of these she had been taking the first three for four weeks and the last drug for only six days. Tetracycline was administered for four days during the pyrexia. Phenobarbitone was discontinued on the eighth day of the pyrexia and the temperature continued to rise until the fourteenth day of the pyrexia, when agranulocytosis was discovered and atromid discontinued. At this point the temperature began to fall and granulocytes appeared in the peripheral blood.

Phenindione, a drug which has been associated with neutropenia (Maclean, 1962), and butobarbitone were continued until after recovery of the patient. In at least 1,500 patients treated with atromid agranulocytosis has not been reported; in a study of some patients the only haematological abnormality recorded has been a slight fluctuation in haemoglobin (Owen Williams, 1963). One must consider that atromid, by its own action or by its

synergistic action on the mechanism by which phenindione depresses the granulocytes, is a possible cause of the agranulocytosis in this patient. The case is being studied further.

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Infestation of Human Eyelid by a Larval Tick (*Ixodes ricinus* L.)

On May 31, 1955, I noticed a small bluish tumour some 2 to 3 mm. in diameter on the left lower eyelid of one of my children (a boy aged 2). On examination with a hand lens it was seen to be a larval tick, which I then removed. Subsequent examination showed that the tick was the larva of *Ixodes ricinus* L. Infestation must have occurred in our garden at Cobh. A thorough search failed to reveal further engorging ticks. This observation is somewhat unusual, since larval tick infestation on a single host is usually multiple, and results from the fact that female ticks ovipositing produce a mass of several thousand eggs within a small area and the six-legged larvae which hatch out generally do not move far from the oviposition site.

Records of *Ixodes ricinus* infesting man are not common, especially in Ireland, so it may be of interest to record that, later on in June, I removed some 28 larval *Ixodes ricinus* from one of my daughters and 18 and 23 larvae from my sons after they had spent a day playing in a tick-infested meadow in West County Cork.

Larval ticks do not often attach to human hosts in suburban gardens, and no further infestations have occurred. If the tick had been *I. hexagonus* Leach it would have been more easily explained, since this species has been recorded on man (Carter, 1955) in urban areas. *I. hexagonus* is sometimes known as the hedgehog tick; both dogs and cats are not uncommon in the garden, and these are known to carry *I. hexagonus* from hedgehogs' nests to houses and gardens (Arthur, 1953). Hedgehogs are also often present in gardens, and some time after discovering the infestation herein recorded I found one in my garden. Other possible dangers of hedgehogs have been previously noted (O'Rourke, 1960). The site of attachment in the above case is of medical interest, since, as in the case of infestation of the nostrils (Walton, 1960), it might pose a difficult problem in diagnosis for non-parasitologically minded medical men.

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