Kell group: Two families (H. and McD.) give information; the H. family suggests that linkage is unlikely.

Lewis group: Three families (Da., McD., and S.) give information; the S. family suggests that linkage is unlikely.

Duffy group: One family (H.) gives information, and suggests that linkage is unlikely.

All the unaffected persons on whom these results are based have passed the age when their siblings developed ataxia.

Discussion

Linkage between two genes is said to occur when they are situated on the same chromosome. If these genes are far apart, such linkage may be difficult to establish, as the chromosomes may cross over each other and disturb the gene pattern. In those blood groups where the evidence that there is no linkage is based on one family, it may be that a cross-over has occurred and masked a linkage which is, in fact, present. For this reason further work among other families with Friedreich's ataxia in the blood groups P, Kell, Lutheran, Lewis, and Duffy is necessary before linkage can be disproved.

On the evidence of four families each, linkage between Friedreich's ataxia and the blood groups ABO, rhesus, and MN has been excluded, and on the evidence of two families, blood group Ss.

The search for linkage in hereditary diseases is an interesting one. At the present state of knowledge, advice to relatives on the chances of their transmitting the disease can be based only on mathematical chance. If close linkage with an easily detected gene were discovered it would be possible in some families to tell the parents if younger children were to be affected, and to tell unaffected siblings if it was possible for them to transmit the disease or not. It can be seen from this study that not all matings give information; if linkage is not close cross-over may occur, and this would tend to invalidate prognosis. Although it appears unlikely, different genes may be responsible for the recessive form of Friedreich's ataxia; if this is the case, linkage patterns are likely to remain obscure.

Summary

In a study of inheritance in recessive Friedreich's ataxia no evidence of linkage between this disease and nine blood groups could be detected. The limitations of this type of study are discussed.

I would like to make my acknowledgments to the National Blood Transfusion Association of Ireland, and to Mr. Cann, chief technician, who undertook the blood-grouping.

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"A complaint that chocolate sweets bought in a cinema were stale was fully confirmed by both their taste and appearance. Further inquiries elicited the astonishing facts that no sort of routine turnover of stock existed and that sweets three years old were sold next to fresh stock of the same pack. These facts were firmly pointed out to the manager concerned." (Birmingham City Analyst, Report for Fourth Quarter, 1960.)

BLOOD GROUPS AND SECRETOR STATUS IN ULCERATIVE COLITIS

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Since the original observations of Aird *et al.* (1954) it has become well established that there is an association between blood groups and certain diseases of the upper gastro-intestinal tract—namely, gastric ulcer, duodenal ulcer, and gastric carcinoma. In addition, there is an association between duodenal ulcer and the secretor status (Clarke *et al.*, 1956). In a review of the whole subject of blood groups and disease, Roberts (1959) made no mention of ulcerative colitis. The purpose of the present study was to assemble data relevant to this disease.

Sources of Data

The blood groups of ulcerative colitis patients were derived from two sources. First, information was obtained from the case records of in-patients who had been treated with blood transfusion. Secondly, a considerable number of patients with the disease currently attending a special clinic had their blood groups and their secretor status determined by one of us. All the patients were examples of classical ulcerative colitis. Patients in whom the disease was confined to the rectum and recto-sigmoid region—so-called haemorrhagic proctitis or proctosigmoiditis—were excluded.

The controls were obtained from the Oxford Regional Blood Transfusion Centre, and consisted of the blood groups of all donors of the Oxford Region attending during August to November, 1959, inclusive.

Distribution of ABO Blood Groups Among Patients with Ulcerative Colitis and Blood Donors

ABO Blood Group	Actual No. of Subjects		Percentage Distribution	
	Ulcerative Colitis	Blood Donors	Ulcerative Colitis	Blood Donors
O	147	6,010	46.37	46.88
A	124	5,382	39.12	41.98
B	33	1,027	10.41	8.01
AB	13	401	4.10	3.13
Totals	317	12,820	100%	100%

Statistical significance of differences: $\chi^2 = 3.74$. $P \approx 0.3$.

Results

The Table shows the results for the ABO blood groups. It will be seen that the ulcerative colitis patients closely resemble the controls in relation to blood-group distribution. In view of the fact that the ulcerative colitis group is a large one, the possibility of any significant association between ABO blood groups and ulcerative colitis appears to us to be remote. In this we are in agreement with the studies of Buckwalter *et al.* (1956) and Winstone *et al.* (1960).

Among 101 of our patients with ulcerative colitis there were 24 "non-secretors" (23.8%), a proportion which is closely similar to that found in healthy subjects (Clarke *et al.*, 1956; Wallace *et al.*, 1958). Once again we are in agreement with the findings of Winstone *et al.* (1960).

Summary

The ABO blood groups of 317 patients with ulcerative colitis have been compared with those of 12,820 blood donors of the Oxford Region. No significant difference was found to exist.

In 101 patients with ulcerative colitis the proportion of "non-secretors" was normal.

We are indebted to Mr. Peter Collins, of the Oxford Regional Blood Transfusion Service, for the information regarding blood donors.

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LEG ULCERS: ASSESSMENT OF RESPONSE TO CERTAIN TOPICAL MEDICAMENTS*

BY

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Leg ulcers are such a serious cause of disability that any application that might shorten invalidism merits a trial. The present series of patients with this complaint was collected over a period of 10 years, and the purpose was to demonstrate the rates of healing with different dressing under in-patient hospital conditions. Obvious difficulties in any such venture include the wide choice of remedies claimed to be effective, and the tendency to yield to the subjective element in judgment on the part of the observer and his colleagues. With regard to the former difficulty, no attempt was made to institute an exhaustive, planned, and controlled experiment, preference being given to whichever treatment was thought likely to be most beneficial, starting with tried favourites but including some new ones as well; those which seemed on clinical assessment to be unduly slow in promoting healing or to be harmful to the patients being promptly withdrawn. The resulting information thus comprises something approximating to a record of treatment which would normally have been carried out in our unit. Interest was focused mainly on overcoming the latter difficulty and seeking to formulate an objective test whereby regression rates could be compared numerically and our clinical impressions corroborated or refuted.

Method and Material

The method entailed measuring the ulcer area when treatment started and noting the time of healing—or, as in eight of the cases, measuring again at a later date

*Based on a demonstration arranged by the department of dermatology and presented by one of us (J.C.P.L.) at the Scientific Exhibition of the B.M.A./C.M.A. Joint Annual Scientific Meeting, Edinburgh, July, 1959.

—and comparing the average regression rates per day when various proprietary and other types of application were under investigation. At first direct measurements were made; then for greater accuracy the method practised by physiotherapists was used, tracings of ulcers being made on transparent paper. These tracings were placed on graph paper, the small squares were counted, and the area of the ulcers was calculated in square millimetres. The answer was divided by the number of days taken for the ulcers to heal. In the eight cases referred to above, the healed area was divided by the number of days elapsing between these measurements (termed "measured" rates). Thus the average healing or regression rate per day was obtained.

Of the 271 patients (88 males and 183 females) chosen as suitable for final assessment, 40 appeared more than once in the series, suffering from multiple ulcers on different preparations or from ulcers which recurred after varying intervals, sometimes several years. The ages of the patients ranged between 17 and 84 years. Of the ulcers, 96% were classified as gravitational or "varicose," 3% as ischaemic (hypertensive or arteriosclerotic), and 1% as trophic. The left leg was involved in 50%, the right in 40%, and both legs in 10% of cases. On the final assessment of cases there were 343 ulcers, 302 of which healed with treatment, 16 otherwise disposed of, and 25 did not respond. Total duration since development of ulceration varied from one month to 50 years, whereas immediate duration, or the length of time the particular ulcer under treatment had been present, extended from 10 days to 20 years.

All the patients in the series were recumbent for the greater part of their stay in hospital. The appropriate treatment for any concurrent or underlying complaint was given and the patient was referred to another unit for adjuvant therapy as this became necessary. Ischaemic and trophic ulcers required their special regimen, including warmth and rest in bed with the limb loosely bandaged or covered with a cage, followed by sympathetic block and sympathectomy if other methods failed (Anning, 1954). Patients with both these types of ulceration were treated recumbent, in the horizontal position; but for gravitational ulcers, which formed the majority, the foot of the bed was generally raised. When these gravitational ulcers healed the patients were encouraged to be ambulant, applying dusting powder only and wearing a crêpe bandage applied from the toes upwards to below the knee. Later a heavy-duty below-the-knee elastic stocking was supplied. Light centripetal massage with the foot elevated was carried out by the patient or by a relative or friend.

Results

The results of the investigation are recorded in Table I, where the medicaments under unit and grouped headings are arranged in order of rapidity of mean rates of healing recorded as sq. mm. per day. The percentage of ulcers healed has also been recorded, but this is not considered to be of great significance, because most ulcers not grossly infected will heal eventually on any non-irritant application provided the patient is recumbent.

In Table I the number of cases, number of ulcers, and the mean and range of healing rates are recorded under each heading. Under "remarks" we find the number of ulcers which failed to heal, those in which this could be attributed to sensitization to the medicament