penicillin dermatitis in 1944 was an acquired sensitivity phenomenon induced by a second course of penicillin 25 days after the first (Bedford, 1946). The second and more severe episode, four weeks before the incident reported above, was expected and guarded against. But the reaction to aureomycin had occurred with the first dose. Tomaszewski (1951) has noted that "side-effects to chloramphenicol and aureomycin . . . developed more rapidly in cases previously treated with penicillin and streptomycin." Can aureomycin and penicillin have common antigenic properties? Experiments are in progress to elucidate this point.

It is of interest that the patient's first symptom was pruritus at the site of previous fungus infection. In view of the possible relationship between penicillin, aureomycin, and ringworm of the feet, it was considered that the patient may be "sensitive" to the many products of mould growth used therapeutically. Skin tests showed that this was indeed highly probable (see Table). Penicillin, streptomycin, aureomycin, chloramphenicol, "terramycin," and aerosporin (polymyxin B) gave strongly positive results on intradermal injection. Numerous "control" suspensions and sera were negative, but an acetic acid solution of pH 3.4 used as "control" for those antibiotic solutions which are highly acid gave a weakly positive result. Trichophytin (a product of culture of a common pathogenic skin fungus) also yielded a strong positive, as did a proprietary preparation of vitamin B₁₂ made by streptomyces culture, whereas a vitamin B₁₂ made from liver extract gave a negative result. It should be noted that chloramphenicol, although a synthetic compound, also yielded a positive result: it is thus reasonable to infer that the dermal reactions are not due solely to impurities present in extracts of mould cultures.

It is invidious to argue from the particular to the general, but it is reasonable to assume that this patient's idiosyncrasies are not unique. This has already been demonstrated with a vitamin B₁₂ streptomyces product (Bedford, 1951). Severe reactions, however uncommon, to aureomycin and the newer "antibiotics" should therefore be anticipated, particularly in those people who are "sensitive" to penicillin.

Summary

A severe idiosyncratic reaction to aureomycin is described in a patient known to be "sensitive" to penicillin.

Dermal tests have shown him to be "sensitive" to many "antibiotics" and to trichophytin (a product of growth of a common pathogenic skin fungus).

There is possibly an antigenic relationship between the products of growth of various moulds and fungi.

Though they may be uncommon, severe reactions to the newer "antibiotics" should be anticipated, particularly in people known to be "sensitive" to penicillin.

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A NEW DILUTING FLUID FOR THE EOSINOPHIL COUNT

BY

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Eosinophil counts are widely used in the control of treatment by A.C.T.H. and adrenal steroids. These counts are usually done by direct enumeration in the counting chamber. The diluting fluids generally employed for these counts are either the eosin-acetone diluent of Dunger (1910) or the phloxine-propyleneglycol diluent of Randolph (1944).

The diluting fluid described below has several practical advantages over these solutions, and fulfils the main requirements of a diluent for these counts.

Method

The formula for the diluting fluid used is :

Urea	..	..	..	..	50 g.
Trisodium citrate	..	..	..	..	0.6 g.
Distilled water	..	..	..	to	100 ml.
Aqueous phloxine 2%	..	..	..	..	5 ml.

It is found in practice that eosinophils tend to collect around any floating particle, thus giving an uneven distribution in the counting chamber, which predisposes to erroneous counting. It is therefore advisable to centrifuge the whole stock as soon as it is made. If the upper 100 ml. of the supernatant liquid is carefully pipetted into a thoroughly clean receptacle any dust or foreign particles will be removed. The remaining 5 ml. is discarded. The diluent keeps well at room temperature.

Ordinary white-cell counting pipettes are used, and four Fuchs-Rosenthal counting chambers are required for each count.

Blood from the second or subsequent drop from a finger-prick is drawn to the 1 mark of the pipette and diluent added to the 11 mark. The pipette is immediately shaken for two to three minutes, and then the four counting chambers are filled by capillation. The counting chambers are set aside in a moist chamber made by placing a few sheets of filter paper soaked in water in the bottom of a large Petri dish. After 15 minutes nearly all the leucocytes other than eosinophils are lysed. As lysis of the eosinophils does not occur from prolonged contact with the solution, the filled counting chambers may be left in the Petri dish up to two hours before counting. The count is then performed under the 16-mm. objective with a $\times 10$ eyepiece. The eosinophils are stained pink and the bilobed nucleus is frequently prominent. A few neutrophils and lymphocytes may still remain after 15 minutes, but they are unstained and cannot be mistaken for eosinophils. All the ruled area of the chamber is counted. The total volume of the four counting chambers is 4 by 3.2 c.mm. = 12.8 c.mm., and the dilution is 1:10. The number of eosinophils per c.mm. is therefore ascertained by dividing the total number counted by 1.28.

Experimental Work

The effect of mechanical agitation of the eosinophils when suspended in this solution was studied by the following experiment.

Five healthy young adults were used as subjects. From each, two pipettes were filled consecutively from a single finger-prick. One of the pipettes was treated according to the method described, but the second pipette was mixed and then allowed to stand for half an hour on the bench. It was then vigorously reshaken, and four counting chambers were filled. After five minutes a count was made. The results are given in the Table.

Results of Experiments

Case	Normal Count	After Standing ½ Hour in Pipette
1	164	167
2	66	72
3	388	342
4	176	162
5	133	141

Similar tests were performed, leaving the pipette for longer periods, but it was found that the eosinophils formed clusters which no amount of shaking would break up. This was also noted by Rud (1947), who used a diluting fluid of quite a different composition. These aggregates may produce errors in counting, so that it is not advisable to leave filled pipettes longer than half an hour.

Discussion

The disadvantages of Dunger's eosin-acetone diluent have been demonstrated by Henneman, Wexler, and Westenhaver (1949). It was shown that with this diluent the counting chambers have to be filled within five minutes of mixing in the pipette. If the pipette is left for longer periods the reshaking that is necessary before filling the counting chambers causes the breaking up of many of the eosinophils. Further, the relatively rapid evaporation of this fluid means that there can be no delay in performing counts. These factors introduce practical difficulties if the blood has to be taken in the wards.

The phloxine-propyleneglycol is an oily liquid which evaporates slowly and stains eosinophils pink, but also has some disadvantages. It has a high viscosity, which prolongs both the mixing process and the settling of the cells in the counting chamber. Some of the cells remain permanently in a different plane from the rest, necessitating repeated refocusing. It does not lyse leucocytes, and its refractive index makes unstained leucocytes stand out more prominently than they do when suspended in watery solutions. As the eosinophils are usually only about one in fifty cells, they are thus more difficult to count in this solution than they are in solutions in which other leucocytes are lysed. The ease with which an eosinophil count can be performed is of considerable importance, because four counting chambers are required for each investigation.

The phloxine-urea diluent described has none of these disadvantages. The high concentration of urea slows evaporation but raises the viscosity only slightly above that of water, so that mixing in the pipette and settling of the cells in the counting chamber are rapid. Other leucocytes are lysed, so that the eosinophils are easily distinguished and are all in the same plane; counting can therefore be done speedily and without fatigue. For these reasons the urea diluent is preferred to those generally used.

Summary

A diluting fluid for eosinophil counts is described. It evaporates slowly and mixes easily. It stains eosinophils pink, and does not lyse them. It lyses other leucocytes and erythrocytes.

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Medical Memorandum

Aleukaemic Myeloid Leukaemia Presenting as Aplastic Anaemia

Cases of aleukaemic leukaemia usually present a diagnostic problem which is solved by examination of the bone marrow. In one case we describe, the clinical diagnosis of acute leukaemia was not substantiated by the haematological findings, which suggested a diagnosis of hypoplastic anaemia, apparently confirmed by recovery after treatment. Five months later, however, the patient was again admitted to hospital and died of typical acute myeloid leukaemia.

The reported cases of aleukaemic leukaemia presenting as aplastic anaemia—for example, that of Parkes Weber (1932)—had recognizable early myeloid cells in the peripheral blood with the exception of that of Easton (1930). In Easton's case there is no mention of the sternal marrow findings or of thrombocytopenia. Only terminally did our case show identifiable precursor cells, and at no time was the spleen or liver palpable.

Case Report

A 14-year-old schoolgirl was admitted to hospital on March 17, 1949, having two weeks previously developed a sore throat, for which she had received penicillin lozenges and oral sulphadiazine (total 20 g.). After four days of this she was observed to be notably pale. For four days before admission she had vomited frequently, and on admission complained of headache, weakness, and nausea. There had been no obvious bleeding from the mucous membranes. She was extremely pale, with severe herpes labialis and a temperature of 104° F. (40° C.). Her gums were normal. The liver, spleen, and superficial lymph nodes were not palpably enlarged. Both ocular fundi showed fairly large circumscribed haemorrhages, reminiscent of subhyaloid haemorrhages seen in cases of subarachnoid haemorrhage. There were no other abnormal signs in any system, and acute leukaemia was diagnosed.

The blood count (see Table) showed Türk cells but no nucleated red blood cells or other abnormal cells. In view of the pancytopenia, the sternal marrow was examined and found to show gross hypoplasia (another puncture of the sternum gave identical findings):—reticulum cells, 2%; haemocytoblasts, 1.75%; myeloblasts, 8%; premyelocytes, 3.25%; n. myelocytes, 0.5%; n. metamyelocytes, 0.25%; segmented polymorphs, 0.25%; no eosinophil or basophil cells were seen; lymphoid cells, 56%; plasma cells, 1.5%; proerythroblasts, 5.5%; normoblasts: basophilic 6%, polychromatic 5.5%, orthochromic 8.5%. A diagnosis of hypoplastic anaemia, the result of sulphonamide therapy,