person yesterday." Repressed material is released fluently, and the saving in time is tremendous. In my experience the method is much more successful in revealing repressed incidents and particularly repressed emotions than the procedure of narco-analysis, using intravenous barbiturate. If partial resistance is encountered during the session, a few further breaths of 20% carbon dioxide will usually be sufficient to overcome this. The patient is able to leave as soon as the session has ended, and there are no complaints of headache and giddiness such as are found after the use of higher concentrations of carbon dioxide or one of the other methods of inducing abreaction. It is therefore a suitable method for use in the treatment of out-patients.

Case 3 is quoted to indicate the value of the treatment in even the most chronic types of psychoneurosis. The applications of this method are undoubtedly much more diverse than those of the abreactive techniques which were developed originally to deal with the casualties of war.

Summary

A simple method of producing abreaction and liberation of repressed memories by the use of carbon dioxide is described.

This method is perfectly safe, and is particularly suitable for use in the treatment of out-patients.

Three illustrative cases are reported.

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IDIOSYNCRASY TO AUREOMYCIN

BY

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Treatment with "aureomycin" is commonly complicated by side-effects which, although unpleasant, are rarely so severe that the drug must be discontinued (Spink *et al.*, 1948; *B.M.J.* Annotation, 1950a; Harris, 1950; Leitner, 1950; Parets, 1950; Tomaszewski, 1951). Further, the diseases for which aureomycin is available in this country are such that the risk of stopping treatment usually outweighs the unpleasantness of its side-effects. A case is here reported, however, in which a reaction to aureomycin was so severe as to preclude absolutely its further administration, and which in an elderly or enfeebled individual might well have been catastrophic. When its cost becomes less prohibitive and supplies less exiguous, aureomycin will be used as widely as penicillin, for it has a wide range of antibacterial activity, and "drug-fastness" has not yet occurred (*B.M.J.* Annotation, 1950b); similar severe reactions are therefore to be expected.

Case Report

The patient was a healthy but obese man aged 36, whose only known drug idiosyncrasies were to aspirin (with nausea, vomiting, and urticaria) and to penicillin (with eczematous dermatitis) (Bedford, 1946). There was neither a personal nor a family history of asthma, hay-fever, or other "allergic" disorders.

Although he was known to be "sensitive" to penicillin, the patient had undergone 72 hours' treatment with a total

of 1,500,000 units of penicillin four weeks previously, under a heavy "umbrella" of antihistaminics and ephedrine, for a cellulitis of the face which had failed to respond to sulphonamides. In spite of the "umbrella" he had developed dermatitis of the hands and feet which had gone on to heavy exfoliation. Other than this, no episode of drug idiosyncrasy had occurred since his first reaction to penicillin in 1944 (Bedford, 1946).

During the recent influenza epidemic he developed fever and a cough productive of purulent sputum. He was given 1 g. of aureomycin by mouth. Ten minutes later he noticed itching between the outer toes of both feet and of the groins, sites which had been infected with ringworm some years previously. Two to three minutes afterwards rapidly ingravescing respiratory embarrassment developed, consisting of inspiratory and expiratory dyspnoea accompanied by stridor and cyanosis. A suffocating minute ensued in a stridulous fight for breath, with eyes protruding and suffused, face a dusky purple, and "the world a reddening haze." A crowing indrawing of breath terminated the inspiratory difficulty, and was succeeded by a typical asthmatic attack, with the chest expanded in wheezing inspiration, the accessory muscles of respiration in action, the patient sitting bolt upright with hands on knees and shoulders elevated, and a difficult unproductive cough.

The only antispasmodic readily available was a proprietary preparation of *nor*-adrenaline in 20-mg. tablets for sublingual administration. Three of these were allowed to dissolve under the tongue, with no effect other than palpitations and a pounding in the head beginning after about 10 minutes and lasting for 15 minutes.

An itching tightness of the hands and feet developed and proceeded rapidly to gross pitting oedema of the hands, feet, scrotum, lips, and tissues about the eyes; several giant urticarial lesions appeared about the wrists and ankles. Subcutaneous adrenaline to a total of 1 ml. of 1/1,000 solution given half an hour later failed to modify the reaction.

The asthmatic attack subsided spontaneously two hours after its onset, but the oedema (a confluent urticaria) of the scrotum, hands, feet, and face reached maximum about two hours afterwards, and slowly subsided some 36 hours later.

The original infection was in no way modified by the aureomycin but ran its course, to subside by lysis within a week.

Discussion

The view that this alarming episode was due to aureomycin, and was not merely coincidental, was strengthened by a strongly positive skin test. A 12-mm. wheal with "pseudopodia" developed within 15 minutes after 0.1 ml. of a 0.25% solution of aureomycin in water had been injected intradermally (see Table); "controls" were negative.

Sensitivity Tests

Test Substance	Wheal at 15 min. (mm.)	Wheal at 30 min. (mm.)	Dose
Penicillin	10	13	100 units in 0.1 ml.
Streptomycin	9	12	0.1 ml. of 0.25% solution
Aureomycin	12	15	0.1 " " 0.25% "
Chloramphenicol	9	12	0.1 " " 0.25% "
Terramycin	9	10	0.1 " " 0.25% "
Trichophytin*	14	11	0.1 " " 1/100 dilution
Aerosporin (polymyxin B)	22	18	0.1 " " 1 mega unit/100 ml.
Vitamin B ₁₂ from streptomycetes	8	9	0.1 ml. of 20 µg./ml.
Vitamin B ₁₂ from liver	0	0	0.2 " " 10 µg./ml.
Sterile water	0	0	0.2 ml.
House dust	0	0	0.2 "
Pollen	0	0	0.2 "
Feathers	0	0	0.2 "
Acetic acid	4	4	0.1 ml. acetic acid pH 3.4
Horse serum	0	0	0.2 ml.

* 24 hours after the subsidence of this wheal a 20-mm. ringed, itching scaling lesion developed at the site of injection.

It is interesting to speculate on the possible relationship between this patient's idiosyncratic reactions to penicillin and aureomycin. His first episode of

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.