arsenic had been selected in that they were all early and frankly active cases with an E.S.R. of over 40 mm. in one hour. The remaining groups included patients over 50 years of age and with advanced disease.

Table II shows the results adjusted by the removal of such patients from each group. The figures in this small series indicate that the results of a single course of treatment with gold salts are no better than those obtained by the other methods described.

TABLE II.—*Results Adjusted to Exclude Elderly and Inactive Cases*

Treatment	No. of Cases	At End of Course		At 3 Months		At 1 Year	
		A	B	A	B	A	B
Gold ..	38 (0)	75	50	62	28	53	30
Copper	40 (20)	77	52	66	32	50	33
Saline..	38 (22)	74	53	60	36	55	30
Arsenic	21 (0)	70	50	60	30	50	29
Physio-therapy	16 (6)	70	43	58	29	48	30
Aspirin	13 (6)	77	38	59	25	60	25

A=Percentage symptomatically improved. B=Percentage objectively improved.
Figures in parentheses show the number of cases eliminated from each group to make the basis for selection comparable to that for gold therapy.

Summary

Attention is drawn once more to the small number of reports of controlled trials of gold therapy and to the variation in the results obtained.

A series of 220 patients have been treated by a variety of measures, 38 of them receiving gold. No appreciable difference in the results has been found, either immediately or after one year.

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Miss Patricia Hornsby-Smith, M.P., Parliamentary Secretary to the Ministry of Health, was the guest speaker at the annual general meeting of the Central Council for the Care of Cripples, which took place on April 10. She said she sympathized very much with the point of view of the council on the edict of the General Nursing Council preventing nurses from starting their training until they are 18, and thus eliminating the year of orthopaedic pre-nursing which many girls of 17 had been doing, but she hoped that some compromise might yet be reached in this matter. The Ministry of Health readily acknowledged and appreciated the voluntary work which the council was doing, and was glad to support the project being launched for the sale of goods made by cripples. A committee was being set up by the Ministry to inquire into the rehabilitation and training of all those physically handicapped. Miss Hornsby-Smith said that, following a circular to 129 local authorities asking them to submit schemes for the care of their physically disabled, 65 had already submitted schemes to the Minister. She thought local authorities had a difficult task in deciding which service to expand and which to create without increasing the rates.

DISSEMINATED ASPERGILLOSIS AND MONILIASIS ASSOCIATED WITH AGRANULOCYTOSIS AND ANTIBIOTIC THERAPY

BY

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Pulmonary aspergillosis and local infections with monilia are not rare, but the disseminated forms are much less common. The use of antibiotics in the presence of these fungous infections is dangerous. The following case is of interest because both fungi were present in the lesions.

Case Report

A window cleaner aged 45 was seen on April 3, 1951, with an abscess of the thigh. He was treated with sulphonamides, and was admitted on April 18 for evacuation of the pus (culture, *Staphylococcus aureus*). He later developed consolidation of the right lung. This was treated with penicillin, 14 million units, and resolved slowly. Albuminuria developed on May 28 and persisted. The white-cell counts on April 26 and July 26 were 4,600 and 4,300 per c.mm., respectively. He was discharged on August 31, and shortly afterwards developed ulceration of the throat, which responded to chloramphenicol. He was readmitted on October 5 and agranulocytosis was found (white cells 1,800, polymorphonuclears 108 per c.mm.), and this persisted. Chloramphenicol was continued (total dose, 30 g.), with oral and intramuscular penicillin. Pyridoxine, 250 mg., "livadex" 20 ml., and three blood transfusions of 1 pint (570 ml.) were given. Consolidation of both lungs developed on November 1 (sputum culture, *Ps. pyocyanea*) and he died on November 7.

At necropsy on November 8 fibrinous pleurisy was present on both sides. A large infarct was found in the right upper lobe and a smaller infarct in the middle lobe; the pulmonary arteries to these areas showed thrombosis. In the left upper lobe was a pale area of consolidation 6 cm. in diameter, but no cavitation. A typical red infarct was present in the left kidney, and both kidneys showed several smaller dark-red areas in the cortex. The liver was enlarged (3,500 g.), pale, and firm, with numerous firm white nodules up to 1.5 cm. in diameter with some hyperaemia at the edges. There were a few similar areas in the spleen. The oesophagus was covered throughout with a ragged soft membranous exudate covering shallow ulcers. There was one small acute ulcer in the stomach. In the duodenum and jejunum there were numerous ulcers up to 1 cm. in diameter with a yellowish base and raised haemorrhagic border. A few ulcers were found in the ileum and one in the caecum. Red marrow was present in the sternum and vertebral bodies. Exploration of the left thigh showed fibrosis at the site of the abscess, but no pus or involvement of the femur.

Sections of the lesion in the left lung showed a central area of necrosis, in which only the outlines of the blood vessels could be distinguished. Surrounding this was a zone of inflammatory infiltration in which plasma cells and macrophages predominated. No polymorphonuclears or eosinophils could be seen. Branching mycelium was present throughout the necrotic zone, invading the inflammatory zone and large and small vessels at the edge. The left lung showed a typical infarct with mycelium in the thrombi. The kidney contained an infarct with mycelium in the lumen of the artery. Sections of liver and spleen revealed areas of necrosis similar to that in the lung, but with a very dense network of mycelium, which extended on to the peritoneal surface of the liver. The ulcers in the alimentary tract showed necrotic centres surrounded by the inflammatory reaction, and invasion of the muscularis and blood vessels by mycelium.

Dr. J. T. Duncan kindly examined the sections and made the following comments on the morphology of the fungi. "The tissue sections showed infection by two different fungi, neither of which can be identified specifically without a culture. One of the fungi shows a coarse septate mycelium bearing tufts of stunted terminal branches, indistinguishable from the vegetative mycelium of *Aspergillus fumigatus* in parasitic life, yet not sufficiently distinctive to be identified with this species in the absence of conidial apparatus. This was the only fungus seen in the lung and kidney sections, but it was present also in other tissues, often within the blood vessels. In fact, like *A. fumigatus*, it seemed to have a marked predilection for the blood vessels, and this accounts for the renal infarct. I would judge that this mould infection originated in the lung and was carried to other organs by the blood stream. The other fungus, which was seen in all of the tissues except the lung and kidney, showed general morphology of *Candida*, which is particularly well shown in the sections of liver and spleen. In many of the tissues both fungi are present, and in some areas they are intimately mixed. However, the *Candida* infection is chiefly associated with the mucosa of the alimentary tract."

Discussion

Disseminated aspergillosis is often associated with infarcts, especially in the kidney (Wahl and Erickson, 1928; Abbott *et al.*, 1952; Dr. H. G. Close, personal communication). Very widespread dissemination has been described (Cawley, 1947; Grekin *et al.*, 1950), as have two cases of endocarditis (Zimmerman, 1950). Infection of the mouth and alimentary tract with monilia is a common complication of agranulocytosis. Several cases of disseminated infection have been described. The portal of entry may be the alimentary tract, as in the present case and in those of Lederer and Todd (1949). Duhig and Mead (1951) discussed the possibility of introduction into the blood stream during intravenous therapy. This probably occurred in the cases described by Joachim and Polayes (1940) and Wikler *et al.* (1942) in drug addicts, and by Geiger *et al.* (1945). The bacterial flora of the alimentary tract is known to change during antibiotic therapy, and fungi often appear (Tomaszewski, 1951) owing to suppression of the normal flora and other factors. It is probable that in the present case dissemination of the fungi was promoted by chloramphenicol therapy. The association of agranulocytosis with chloramphenicol was not well known at the time this patient was treated.

Summary

A case of fatal generalized aspergillosis and moniliasis is described. The patient's illness started with a staphylococcal abscess in the thigh, followed by pyaemia with lung lesions. He later developed agranulocytosis and was treated with chloramphenicol. Recent reports indicate the danger of this drug in agranulocytosis. Aspergillosis and moniliasis were found at necropsy. Reference is made to other cases of generalized fungous infections in the literature.

I wish to thank Mr. P. M. Birks and Dr. R. F. Jarrett for permission to publish this case; Dr. E. N. Davey for his advice in preparing this paper; and Dr. H. G. Close, of Dartford, for allowing me to examine material from his case. Dr. J. T. Duncan's help and advice on the mycology have been invaluable. I am grateful to Miss B. Summers for the histological preparations.

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Medical Memoranda

Monilia Peritonitis

Powerful wide-spectrum antibiotics will suppress the growth of susceptible bacteria, and these may be replaced by monilia or other yeast-like organisms which can in certain situations become pathogenic. Oral and intestinal lesions are well recognized (Woods *et al.*, 1951), and cases of monilia pneumonia (Ormerod and Friedmann, 1951; Wolff, 1952) and moniliasis of the urinary tract (Taylor and Rundle, 1952) have been reported in patients treated with aureomycin or chloramphenicol. So far as we know monilia peritonitis has not hitherto been reported.

Case Report

A man aged 49 was admitted to hospital with foot-drop, fever, and abdominal pain. While in hospital the fever continued, wrist-drop developed, and signs of active carditis appeared. The usual investigations of a pyrexia of unknown origin were negative, and in spite of parenteral penicillin the patient deteriorated and developed bronchopneumonia. He was thought to be suffering from polyarteritis nodosa, and, although he was known to have a duodenal ulcer, it was decided that he should be treated with 100 mg. of A.C.T.H. and 2 g. of aureomycin daily. After three days on this regimen he complained of severe abdominal pain and his abdomen became distended with fluid. He was judged unfit for surgical intervention and 60 oz. (1.7 litres) of brownish viscid fluid was aspirated from the peritoneal cavity. The A.C.T.H. was stopped, the stomach aspirated, and an intravenous drip of glucose–saline begun together with intravenous terramycin. Three days later a further paracentesis was necessary and 100 oz. (2.8 litres) of very viscous fluid was withdrawn.

Large numbers of monilia were found on direct examination of the fluid, with pus cells but no other organisms, and a pure growth of *Candida albicans* was obtained on culture. Gentian violet, 1 g., was given daily by intraperitoneal injection, but fluid continued to reaccumulate and the patient went downhill and died after a further four days. At necropsy 3 litres of fluid was found in the peritoneal cavity, the viscera were coated with fibrino-purulent material, and there was a large perforated ulcer in the first part of the duodenum.

Comment

The aureomycin must have altered the patient's intestinal flora until *C. albicans* was the dominant organism, and when the ulcer perforated as a complication of treatment with A.C.T.H. it was this organism which obtained access to the peritoneal cavity and set up infection. Powerful new remedies of necessity bring with them new complications, and it is important that these should be recorded, as, with the increasing use of these agents, similar cases are to be expected in the future.

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