Case Report Section

Infection of Pneumonectomy Space with Aspergillus Fumigatus Treated by "Nystatin"

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Pulmonary aspergillosis may occur either as a primary or secondary infection.
Primary infection is rare and occurs in people dealing with grain contaminated by fungus, e.g. agricultural workers, and in people handling pigeons and parrots.
Secondary infection may occur as a superimposed infection on the abnormal pulmonary condition, e.g. bronchial carcinoma, pneumoconiosis, tuberculosis or bronchial fistula. It also may develop during antibiotic therapy which inhibits bacteria and promotes growth of other organisms.

Case 1. A man, aged 57, a cooper and a keen amateur gardener, was admitted to this hospital in February 1957 for investigation with a presumptive diagnosis of carcinoma of the right bronchus.

Family history did not reveal anything important and he had never been seriously ill.

History of present illness consisted of intermittent pain of five weeks duration. His doctor found a marked degree of clubbing of the fingers. X-ray film revealed a round density in mid zone of the right lung.

On admission his general condition was good, he was afebrile; and complained of pain in the right chest and dry cough. His appetite was good but he had lost some weight in the past three weeks. He used to smoke 20-30 cigarettes daily, but gave up smoking five years ago.

His chest was emphysematous with a persistent rhonchus in the right mid zone. There was marked clubbing of the fingers. Apart from this there were no other signs of disease in his chest or in the other systems.

X-ray film showed a rounded opacity in the mid zone of the right lung.

His hemoglobin was 104 per cent. The white cell count was 9,450 with the following differential:

Neutrophils 77  Monocytes 6
Stabs 7  Eosinophils 2
Lymphocytes 7  Basophils 1

The urine was negative.

Bronchoscopy revealed the right middle lobe orifice open. Mucous was aspirated. The carina between the two branches of the middle lobe appeared to be oedematous and biopsy showed a bronchial mucosa with only mild edema and mild chronic inflammatory cellular infiltration. The bronchial aspirate was not contributory.

Right pneumonectomy was performed and a hard neoplastic mass involving the lower lobe with a small amount of free bloody fluid in the pleural cavity was found. Smears from pleural fluid were negative for pathogenic organism on direct examination and culture.

As a cover for operation he was given crystalline penicillin 800,000 units daily for 15 days.

On the 15th day after operation a routine blood count showed 14,200 white cells, following which his pneumonectomy space was aspirated. Culture showed Staphylococcus aureus which was resistant to penicillin but sensitive to erythromycin and tetracycline. Penicillin injections were discontinued, and a course of 500 mgms. of 200 mgms. of achromycin, by mouth, was commenced, six hourly for the first three days and eight hourly for the other three days. Simultaneously he was aspirated daily, and on each occasion 1 ounce of blood stained fluid was removed from the space, and 500 mgms. of achromycin in 20 ccs. of water was inserted. Cultures of the fifth and sixth aspirations were sterile for bacteria, but the latter showed infection was Aspergillus fumigatus for the first time.

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The course of achronomycin was discontinued, and treatment with a solution of brilliant green was started.

Following this he was aspirated for the following six days, and about four to eight ounces removed on each occasion. On the first three days 25, 40 and 60, and on the last three days 100 cc of solution of brilliant green in strength 8/1,000,000 was inserted into the space.

At the end of this treatment, however, cultures of fluid still showed Aspergillus fumigatus, and this treatment was discontinued. He was then aspirated daily for the next 21 days, and a suspension of Nystatin, 450 cc in strength 100 units per mL, were inserted into the space during the first week, and during the remaining 14 days 700-800 cc of Nystatin, 500 units per mL, were used.

The amount of fluid aspirated from the chest varied from 450 to 800 cubic centimeters, depending largely on the amount of suspension of Nystatin used on the previous day.

At the beginning of this treatment the culture showed a moderate growth of Aspergillus fumigatus, and at the end of the first week there were three to eight colonies seen; during the second week cultures of fluid were intermittently positive, and during the third week they became, and remained, sterile.

After obtaining seven consecutive negative cultures for Aspergillus fumigatus, and being symptom free, with a normal blood count, he was discharged. He is now well and working.

Case II. A 43 year old roadman, was admitted to this hospital in April 1957, with a collapsed right middle lobe, for investigation and treatment.

His family history did not reveal anything important.

He had never been seriously ill.

His present illness consisted of fever of eight weeks duration followed by productive cough with yellowish sputum stained with blood on a few occasions; pain in the right chest; dyspnoea on exertion; with a loss of half a stone in weight in the past six months.

On admission his general condition was fair; he had a slightly raised temperature; he complained of cough with a half cupful of yellowish sputum in 24 hours; pain in the right chest, and dyspnoea on exertion. He had smoked 20 cigarettes daily since youth.

There was impairment of respiratory movements on the right and dullness in the right middle zone anteriorly with no adventitious sound. Mild clubbing of the fingers was present. Nothing abnormal was discovered in the other systems.

A chest x-ray film showed the right middle lobe collapsed. The hemoglobin was 98 per cent. There were 15,000 white blood cells as follows: Neutrophils 52, Stabs 18, Lymphocytes 22, Monocytes 11, Eosinophils 1, Basophils 1.

Bronchoscopy showed pus in the right main bronchus coming from the middle lobe orifice which was aspirated. The lips of the middle lobe orifice were oedematous and narrowed. Biopsy revealed squamous carcinoma.

Right pneumonectomy was performed, and on the fourth day his temperature was 100°F, and white blood cell count 17,100. Cultures of pleural fluid from the space were sterile for bacteria, but showed infection by Aspergillus fumigatus.

As cover for operation he was having 800,000 units of crystaline penicillin daily.

Penicillin injections were discontinued and he was aspirated daily for the following 10 days, when between 6 and 10 ounces of thin blood stained fluid was removed each time and replaced with the same amount of suspension of nystatin in strength 500 units per mL.

After three days of this treatment cultures became, and remained, sterile.

He was discharged after obtaining seven consecutive cultures negative for this infection. He is now well and symptom free, with normal blood count.

DISCUSSION

In the treatment of pulmonary aspergillosis various drugs, such as iodies and neoarsphenamine, (2) hydroxystilbamadine, are recommended, but results are unsatisfactory.

According to Hinson et al (1952) iodies and neoarsphenamine were of no value in the treatment of his cases, however, Aspergillus fumigatus was inhibited in vitro by M and B 938 in concentration of 1:100,000. Seabury (1956) treated a case of aspergillosis of an orbit associated with pulmonary lesions with 2-hydroxystilbamadine without effect. Riddell (1956) says that "inhalation of 'nystatin' in suspension, or of solutions of brilliant green, or hydroxystilbamadine is effective in suppressing or removing Aspergillus fumigatus from the bronchial secretions."

In the above mentioned cases of infection of the pneumonectomy space with Aspergillus fumigatus an aqueous suspension of Mycostatin, consisting of 100 and 500 units per mL was used. The suspensions were prepared daily and none was older than 48 hours. Mycostatin sterile powder was obtained from Messrs. E. R. Squibb & Sons, New York.

The first patient had 21 daily aspirations and instillation of a suspension of Nystatin; during the first seven days 400 cc of fluid, in strength 100 units per mL, and during the remaining 14 days 700-800 cc of strength 500 units per mL was used.
The second patient has 10 daily aspirations and replacements with the same amount of suspension of Nystatin of 500 units per ml. The amount used on each occasion was between 180 and 280 ccs.

No Nystatin was given by mouth, and while they were having instillations of Nystatin into the chest no other antibiotics were used. No toxic symptom was observed during this treatment.

During this course of treatment with Nystatin wet smear and cultures were gradually improving, and after obtaining seven negative cultures on consecutive days both patients were discharged. Both patients were seen in March 1958; both are well and symptom free and doing full-time work.

In the first case the infection of the pneumonectomy space was most likely due to antibiotic therapy, and in the second case the infection could have developed from the bronchial stump or through a small bronchial leak or space becoming infected by Aspergillus fumigatus during operation.

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Addendum: Both patients who were seen in March, 1959 are fit and well.

REFERENCES

2 Roscoe, L. Pullen: Pulmonary Diseases, p. 466, 1956.

Mediastinal and Subcutaneous Emphysema, Pneumothorax, Pneumoperitoneum and Myocardial Infarction Occurring Simultaneously*

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A Case Report

Mediastinal emphysema is commonly followed by or associated with pneumothorax and may be complicated by the development of subcutaneous emphysema, retroperitoneal emphysema and pneumoperitoneum. Because of similarities in the clinical pictures of pneumothorax, mediastinal emphysema and myocardial infarction the following case, combining all these entities simultaneously, is reported.

A 53 year old woman (C. G. H. No. 22063) was brought to the hospital on November 4, 1956 in an unconscious state after having collapsed in church. From her son it was learned that she had suffered from breathlessness and chest pain on exertion, and had had swelling of the feet and legs.

Examination revealed a thin, pale woman with cold, clammy skin, slow but regular respirations, and no detectable blood pressure or heart sounds. On cursory examination the chest and abdomen were unremarkable and no paralyses were noted. With administration of nor-epinephrine the systolic pressure rose to 80 mm. Hg. Shortly afterwards she began to vomit.

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