INVESTIGATIONS INTO THE ROLE OF FUNGI IN PULMONARY DISEASES

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The study of Pulmonary Mycoses is of considerable practical interest, since diseases caused by fungi, or in which fungi may be suspected as etiologic agents, constitute a sizeable percentage of the disorders affecting the lungs. The incidence of Pulmonary mycoses seems to be increasing day by day. This is not only due to the improved diagnostic methods but also because the clinicians have started taking more and more interest in medical mycology. Drugs come as a mixed blessing and so do the chemotherapeutic agents and antibiotics because by subduing bacteria they allow the free growth of fungi in the body. The subject was a neglected one in the past and much progress could not be done, but as the physicians and the pathologists are becoming more fungus conscious, more and more cases are coming to light. However, their mode of infection, whether from exogenous or endogenous source and their pathogenesis is still not very clear. Moreover, the study of mycotic infections of the lungs makes up one of the most interesting chapters in the field of nontuberculous diseases of the chest. Cough, mucoid or purulent expectoration, occasional hemoptysis, pleural pain, loss of weight, night sweats and gradual weakness as found in tuberculosis are also the main symptoms of the pneumomycosis like Moniliasis Cryptococcosis, Histoplasmosis, Geotrichosis and Actinomycosis. In their close resemblance to tuberculosis both as to the symptomatology and radiological findings, the Pneumomycosis offer a challenge to the diagnostic ability of the internist, chest specialist and radiologist.

We undertook these investigations to find out the role played by fungi in Pulmonary diseases and whether the fungus isolated was the primary or a secondary invader. Cases suffering from chronic pulmonary diseases like bronchiectasis, lung abscess, tuberculosis and malignancy lung not showing any beneficial effect of the routine
treatment given to them were selected for investigations. These cases were divided in two groups.

1. Non-tuberculous chronic pulmonary diseases.
2. Pulmonary tuberculosis with sputum positive for A.F.B.

In the first group the sputum was subjected to the following investigations:

1. (a) Direct Examination.
   i) 4% KOH preparation.
   ii) Gram's staining
   iii) Ziehl Neelsen's Staining for A.F.B.
   iv) a) Without concentration
       b) With concentration.
   iv) P.A.S. Stain.

(b) Cultural investigations on the following media:
   i) Sabouraud's medium with Achromycin.
   ii) Sabouraud's medium with Achromycin and Actidione.
   iii) Brain Heart Agar with Achromycin.
   iv) Brain Heart Agar with Achromycin and Actidione.
   v) Thioglycollate medium.

Achromycin was added to prevent the growth of bacterial flora and Actidione to check the growth of non-pathogenic fungi.

In the second group, the sputa in addition to the above investigations were also cultured on the following media:

   i) Lowenstein Jensen medium plain.
   ii) Lowenstein Jensen medium with 20 microgram of Streptomycin per ml. of the medium.
   iii) Lowenstein Jensen medium with 100 micrograms of streptomycin per ml. of the medium.

Streptomycin was added to the medium to find out if the tubercle bacilli had become resistant to streptomycin and thus keeping up the infection.

Sensitivity of the organisms isolated was tested against Nystatin. Brain heart liquid medium was used as the culture medium for carrying out these sensitivity tests. Serial dilution method as used by me for testing the aromatic diamidines (ANDLEIGH, 1957) was used to carry out the sensitivity tests. All the strains of C. albicans isolated were sensitive to Nystatin. No growth of any strain of C. albicans isolated was obtained in a concentration of 50 microgram per ml of the medium. The strains of Actinomyces bovis were not found to be sensitive to Nystatin. The following observations were made in the first thirty two cases.