Thesis Title DETECTION OF ANTIBODY AGAINST ASPERGILLUS FUMIGATUS BY ELISA AND POSSIBLE ROLE IN THE DIAGNOSIS OF ASPERGILLOSIS

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Date of Graduation 27 May B.E. 2534 (1991)

ABSTRACT

Aspergillosis is a disease caused by ubiquitous filamentous fungus belonging to the genus *Aspergillus*. It is one of the most common systemic mycoses reported from autopsy cases. Aspergillosis frequently affects respiratory tract and can be defined according to its different forms as extrinsic asthma, extrinsic alveolitis, allergic bronchopulmonary aspergillosis (ABPA), invasive aspergillosis, aspergilloma and chronic necrotizing pulmonary aspergillosis (CNPA).

The definitive diagnosis by demonstration of the fungus either by culture or staining methods performed on the specimens taken from the affected lesions is difficult and not practical. Besides this, the results from cultures of sputum are usually not reliable. Therefore, the diagnosis needs information from clinical pictures, chest roentgenogram together with culture and serological results.

In this study, double immunodiffusion method was developed for detection of precipitating antibodies to *Aspergillus* species in patients' sera. A home-made battery of reagents, composed of culture filtrate (CF) antigens and their homologous rabbit antisera of *A. fumigatus* B-1172, *A. flavus* B-15, *A. niger* 107, *A. nidulans* B-1390 and *A. terreus* B-985. Three hundred and fourty nine sera which comprised of 129 from patients with suspected aspergillosis, 30 from patients with lung cancer, 18 from patients with other systemic mycotic infections, 34 from patients with melioidosis, 17 from patients with active pulmonary tuberculosis and 121 from normal individuals were tested. Positive precipitating antibodies by double immunodiffusion method were found in 27.13% (35/129) of patients with suspected aspergillosis while false positive results were found in 1.81% (4/220) in control groups.

Because of the rather low sensitivity of the double immunodiffusion method , we have developed an ELISA (Enzyme-linked immunosorbent assay) which is more sensitive technique to detect specific antibodies in patients' sera. AS75 antigen from *A. fumigatus* B-1172 was prepared for coating the plates and the assay was performed with the same groups of sera tested by double immunodiffusion. The positive results by double immunodiffusion method and/or positive cultures of *Aspergillus* $\geq$ 2 times was used as the gold standard for the diagnosis of proved cases of aspergillosis. The sensitivity and specificity of the ELISA system, when the cut-off level was used at anti-AS75 IgG titers $\geq$ 1: 3 500, were 73.46% (23/36) and 91.28% (21/220) respectively.