IMMUNOGLOBULINS A & G DEFICIENCY IN NOSOCOMIAL POSTOPERATIVE INFECTIONS.

THESIS

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بسم الله الرحمن الرحيم

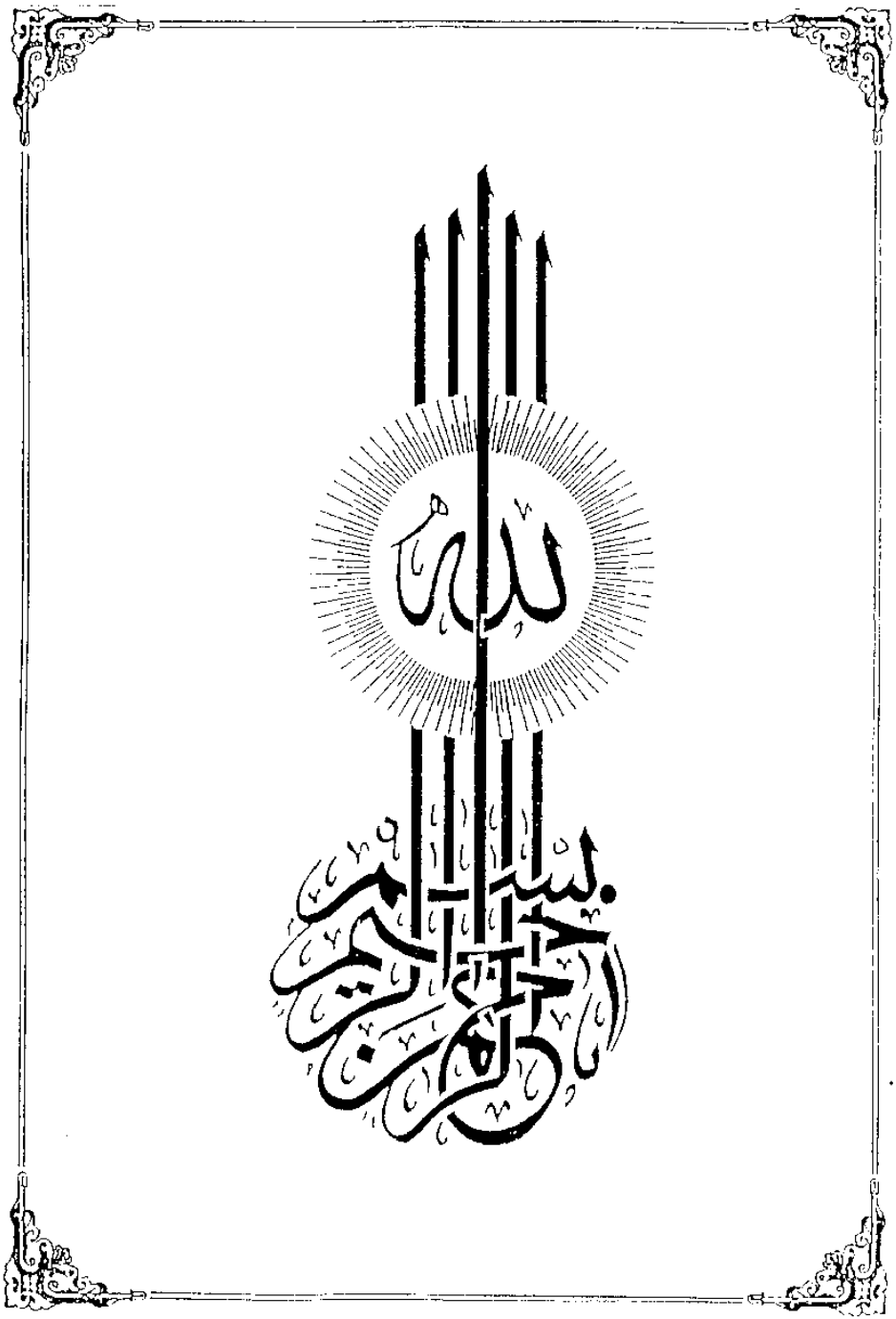
اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ

خَلَقَ الْإِنسَانَ مِنْ عَلَقٍ

اقْرَأْ وَرَبُّكَ الْأَكْرَمُ الَّذِي عَلَّمَ بِالْقَلَمِ

عَلَّمَ الْإِنسَانَ مَا لَمْ يَعْلَمْ

العلق ١-٥



DEDICATION

To the spirit of my evergiving beloved father.

To my evergiving beloved mother.

To the spirit of my beloved father-in-law.

and to my wife, the best anyone can ever have.

Without their help this work could never have been done.

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INTRODUCTION

INTRODUCTION

A considerable large percent of people are subjected to a surgical operation at one time of their live , and one of the most important postoperative complications is postoperative infection which adds morbidity and increases mortality rate.

It is well known that, the immune defence mechanisms: non-specific and specific immunity (humoral and cell mediated immunity), are the cornerstone in defence against infection and immunocompromised patients are more susceptible to infection.

It is now well known that surgical trauma decreases serum immunoglobulins: A,G,&M by about 30% which return back to normal level in one week if infection did not occur, but if infection occurs, immunoglobulins level becomes supranormal after one week.[3]

The present study is an attempt to find out whether those with borderline preoperative IgA or IgG have a higher incidence of nosocomial general or local infection or not.

NOSOCOMIAL INFECTION

Center for Disease Control (CDC) Definitions for Nosocomial Infections:-

The definitions are based on several important principles. First, information used to determine the presence and classification of an infection involves various combinations of clinical findings and results of laboratory and other diagnostic tests. Clinical evidence is derived from direct observation of the patient or review of information in the patient's chart or other ward or unit records. Laboratory evidence consists of results of cultures, antigen-or antibody- detection tests, and microscopic visualization methods. Supportive data are derived from other diagnostic studies, such as results of X-ray studies, ultrasound examination, computed tomography scan, endoscopic procedures, biopsies, and needle aspiration. For infections in which clinical manifestations are different in neonates and infants than in older persons, specific criteria are included.

Second, for an infection to be defined as nosocomial, there must be no evidence that the infection was present or incubating at the time of hospital admission. An infection that occurs in the following special situations is considered nosocomial: (1) infection that is acquired in the hospital and becomes evident

after hospital discharge and (2) newborn infection that is the result of passage through the birth canal.

Third, infection that occurs as the result of the following special situations is not considered nosocomial: (1) infection that is associated with a complication or extension of infection already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection and (2) infection in an infant that is known or proved to have been acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, and syphilis) and becomes evident shortly after birth.

Fourth, except for a few situations that are referred to in the definitions, no specific time during or after hospitalization is given to determine whether an infection is nosocomial or community- acquired. Thus each infection must be assessed for evidence that links it to hospitalization.[3]

Hospital-acquired infections (also called nosocomial infections) are defined as infections occurring in patients after admission to the hospital that were neither present nor in incubation at the time of admission. Infection acquired in the hospital but not manifest until after the patient is discharged are also included. Although many of these infections can be prevented,

some cannot, and the term hospital-acquired infection should not be equated with iatrogenic infection caused by a diagnostic or therapeutic intervention such as the insertion of a urethral or intravenous catheter.[126]

History :

Nosocomial infections have undoubtedly existed ever since sick people were first gathered together for care. Medical writings of the 18th an 19th centuries report wound infection rates as high as 50% or more-presumably, infections caused primarily by streptococci and staphylococci. In the mid-19th century, Semmelweiss in Austria and Holmes in the United States wrote vividly of the astonishing rates of puerperal fever in lying-in hospitals, infection most likely caused primarily by group A streptococci. During World War I and II, nosocomial infections were usually caused by streptococci and staphylococci. The introduction of penicillin abated streptococcal but had only temporary effect on staphylococcal nosocomial infections. The predominant staphylococci were resistant in turn to a succession of antimicrobials introduced during the decade beginning in 1945. Thus nosocomial infection during the 1950s was synonymous with staphylococcal infection. Multiple drug resistance in certain bacteriophage groups of staphylococci was associated with a remarkable ability to persist in the hospital environment and in hospital personnel, and to spread from patient to patient. Outbreaks of pustular disease in neonates, surgical wound infections, and pneumonias were common in hospitals and were

caused principally by multi-drug resistant staphylococci. At the same time, there was a striking and progressive increase in the frequency of infection caused by gram-negative bacilli and, more recently, by fungi. The predominance of infection caused by gram-negative bacilli continued and stabilized in the 1970s; 60% or more of all nosocomial infections were caused by gram-negative bacilli in that decade.[59]

Epidemiology :

A priority list for surveillance activities must be developed, and it has been suggested that critical care areas be top priority. Although the latter usually comprise 5-10% of hospital beds, they are the focus of 33-45% of all nosocomial blood stream and pulmonary infections. Furthermore, the critical care units are often the birthplace of antibiotic resistance, the location of most epidemics in the hospital, and the place where many device-related (and thus preventable) infections occur.[175]

Nosocomial infection may be exogenous when caused by microorganisms acquired from a source within the institutional environment; and endogenous when caused by microorganisms derived from the patient's own microflora. An exogenous microorganism may suppress the host defence mechanisms resulting in infection by endogenous microorganisms. It is more useful to consider nosocomial infections as endemic or epidemic depending on whether or not the infection is part of a definable outbreak. It is estimated that

about 5% of all nosocomial infections are epidemic. In general, nosocomial infections caused by the group A Streptococcus pyogenes and Staphylococcus aureus are associated with people; that is other patients or personnel of the institution who either have an overt infection or are asymptomatic but disseminating carriers. Epidemiologically, the enterococci, as components of the intestinal microflora, are the same as the enteric gram-negative bacilli. Although both are usually associated with endogenous infection, other are a number of exceptions, for example, diarrhea caused by E.coli may spread from carrier personnel to infants in newborn nurseries. Nosocomial infections caused by aerobic gram-negative bacilli that are not ordinarily part of the host microflora, such as Enterobacter agglomerans & Serratia , should be considered exogenous in origin unless proved otherwise.[138]

Hospital-acquired infections occur in 5% of patients admitted to general hospital. The highest infection rates are reported from tertiary-care centers, while the prevalence of these infections is much lower in community hospitals. These differences in rates appear to be due to the greater care hospitals and may also reflect greater utilization of invasive procedures and diagnostic tests in the management of these patients. On the average hospital-acquired infections have a mortality rate of 1% and contribute to the death of at least an additional 3% of cases. Therefore the estimated 2 million hospital-acquired infections which occur annually in the United States result in approximately 20,000 deaths and contribute

to the mortality of an additional 60,000 patients. Nosocomial infections add over 7.5 milliom hospital days and over 1 billion dollars to the national health care costs.[126]