VIRAL DISEASES DURING PREGNANCY

REVIEW

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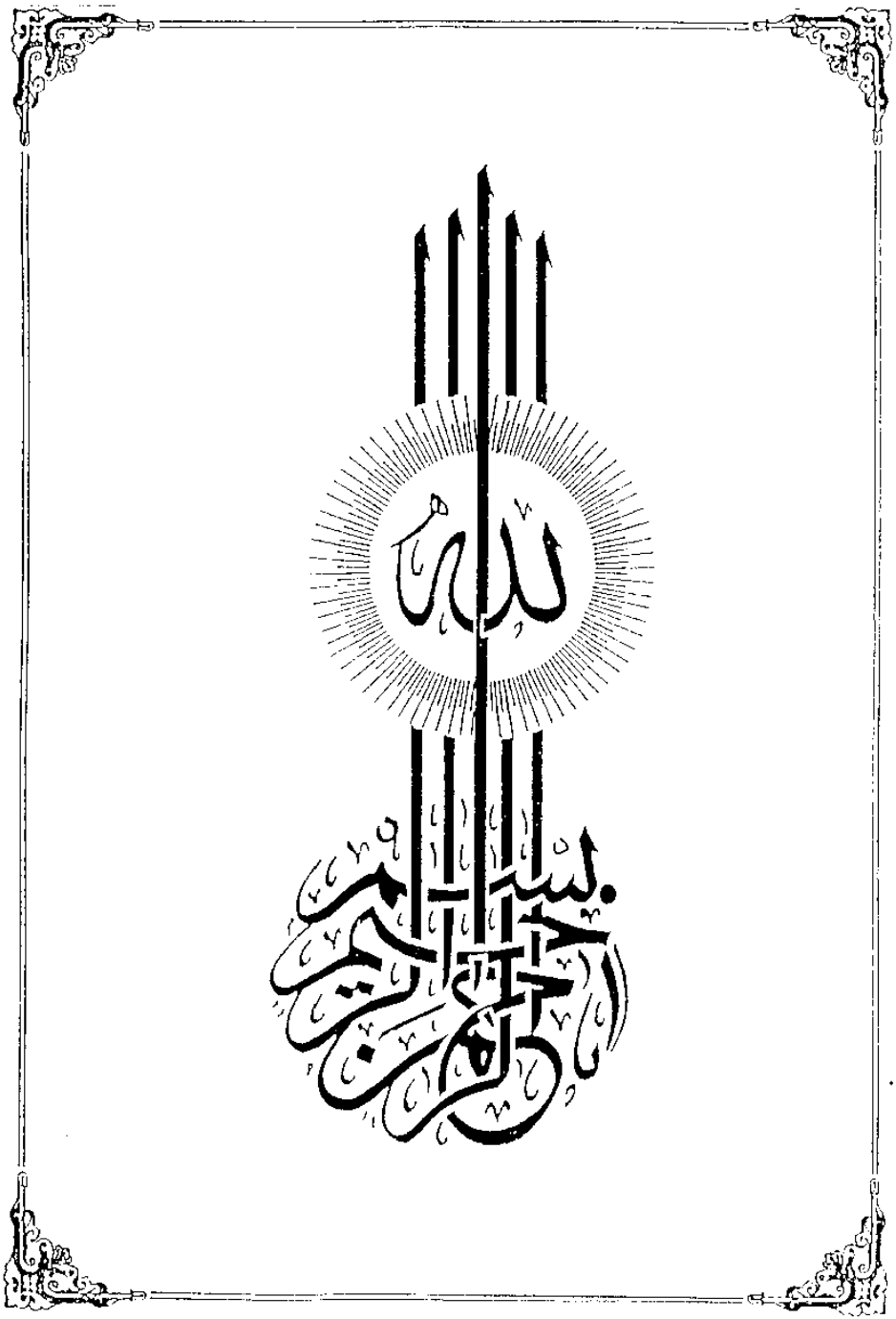

C O N T E N T S

CHAPTER 1

INTRODUCTION

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INTRODUCTION

Viral infections during pregnancy are of concern not only in the terms of possible maternal morbidity but because certain agents are capable of crossing the placenta and causing serious damage to the fetus.

Different types of these viruses were shown to be transmitted during pregnancy such as influenza, mumps, poliomyelitis, coxsackie, hepatities, measles, smallpox, cytomegalovirus, vaccinia, herpes simplex, varricella-zoster and rubella.

The most prominant viral transmitted diseases during pregnancy are rubella, cytomegalovirus, and herpes simplex virus type 2.

The methods of diagnosing viral infection are variable, either direct detection of the virus particles or its antigen, isolation of the virus itself, or serological tests for antibody and immunoglobulin estimation.

The present lines of control of viral transmitted diseases during pregnancy depend on the natural history of the disease, and every effort should be made to protect susceptible females by administration of vaccine before the age of child bearing.

The lines of treatment are so effective in some cases of viral transmitted diseases but are not so effective in others and the future may allow the use of more sensetive tests for diagnosis, and more successful and effective lines of treatment.

THE AIM OF THE WORK

This review aims to present the available information in the field of viral infections during pregnancy.

The major viral infections affecting the pregnant woman and the unborn child as well as their gynecologic manifestations will be presented.

The different routs of viral transmission during pregn-pregnancy and the possible immunosuppressive effect of pregnancy will be discussed.

A recommendation for the ideal way to decrease the incidence of viral transmitted diseases during pregnancy and its proper management will be introduced.

Recommendations for further research will be proposed.

CHAPTER 2

GENERAL REVIEW ON VIRUSES

HISTORICAL INTRODUCTION

The microbal theory of infectious disease is established clearly by the discoveries of Louis Pasteur and Robert Koch a century or so ago .

It has been extremely difficult for the protagonists of the theory of spontaneous generation to accept the fact that these minute bodies or microbes could cause disease.

But on their basic studies on the cultural requirements of fungi and bacteria Pasteur and Koch laid the foundations of bacteriology.

By staining bacteria with dyes it could be seen under the microscope.

When other diseases were caused by organisms so small that they could neither be seen nor cultured by the methods of Pasteur and Koch, it was not altogether surprising that this concept was received with considerable scepticism.

Dr Beale (1866) has examined portions of infected blood textures and mucous discharges with the highest magnifying powers that exist, in his investigations into the nature and origin of cattle plague .

He has found no definitely formed substance that can certainly be said to be the cause of the Cattle Plague.

Some years later, Pasteur, whilst working with rabies, suggested that the causative agent might be infinitesimally small,

and both were seen to be proved right in (1886).

The presence of smallpparticle 0.15 microns in diameter just visible by light microscopy in pustular fluid taken from smallpox patients was described by Buist in Edinburgh (1890)

In (1899) Iwanowski,a Russian botanist, and independently Beijerinck, working in Holland, discovered that tobacco mosaic disease could be transmitted from plant to plant by means of a bacteria-free filtrate, using the current standard Berkefeld porcelain candle bacteriological filter.

In (1898) Loeffler and Frosch working in France on foot and mouth disease established that this disease also was caused by a filter-passing agent.

By(1914) agents with similar properties, in that they were ultramicroscopic and filterable,have been isolated from cases of yellow fever, poliomyelitis, smallpox, measles, mumps, varicella and rubella either by inoculation of sub-human primates, or, in some cases, by transmission experiments in human volunteers.

Edward Jenner,(1798) used the term 'vaccine virus' (from the Latin vaccinus, derived from the Latin vacca-a cow) he also used the terms 'immune' and 'immunity' to describe the resitance from previous exposure to cowpox.

He observed that cowpox virus and variolous matter were relatively stable and resisted drying, a fact which is also well recognised today.

Pasteur, aware of Jenner's work, used the term 'vaccin' to

describe a vaccine and wrote at length on the importance of 'attenuation' or modification of virulence of microbes in relation to the development of immunity.

Both Jenner and Pasteur used the term 'virus' in the context of a noxious poison, agents which came to be known as the ultramicroscopic, filterable viruses.

The nature of these agents was then obscure, the fact that they could not be seen under the microscope or cultured by conventional methods made it extremely difficult to study in any detail their role in the diseases they produced, and because of these difficulties it was inevitable that the development of virology should habe lagged behind bacteriology.

Between (1910) and (1950) a number of important developments took place which have led to a completely new understanding about viruses.

Finally, it was accepted that viruses were obligate intracellular parasites that can only multiply in living cells .

By (1920) tissue culture techniques had been developed by Parker and Nye in Canada (1925), and by the Maitlands in England (1928).

A decade later Goodpasture and Anderson (1944) discovered that the cells lining the allantoic and amniotic cavities of the developing chick embryo provided a valuable cell substrate for the growth of a number of viruses.

By the late (1930) the electron microscope had been developed and by its far greater resolving power even the smallest viruses such as poliovirus could be seen, but many years were to pass before the full potential of the modern electron microscope was to be appreciared.

Despite these important advances, it was not until (1949) that the real breakthrough came following the discovery by Enders, Weller and Robbins that poliovirus could be grown in tissue or cell cultures.

The major advances which have taken place in virology in the past quarter of a century can be ascribed to the development of cell culture techniques.

It was fortunate that at the time of the discovery by Enders and his colleagues (1949) antibiotics such as penicillin and streptomycin had been developed.

Today it is taken for granted that all tissue and cell culture media contain antibiotics to prevent bacterial contamina - tion , it would be quite impracticable to produce any viral vaccine in a cell culture system without the use of antibiotics because of the risk of bacterial contamination, but it is well to remember that the early pioneers referred to had no such products available and, although their experiments were carried out on a comparatively small scale, their achievements were great.

During intrauterine life the conceptus may be exposed to many intrinsic and extrinsic influences that may be detrimental to its development and survival. In any discution pertaining to intrauterine infection of the fetus, one reflects on the shrewd observations of Gregg, who in (1941) reported an increased incidence of congenital glaucoma in the offspring of women afflicted by rubella during the first trimester of pregnancy.

Since that time there has been an everincreasing interest in viral infections, and it has been determined that many viruses are capable of producing intrauterine and possible fetal damage.

THE NATURE AND CLASSIFICATION OF VIRUSES

Virus particles were originally referred to as elementary bodies implying a very simple structure, but even with the advent of the first electron microscope little detail of structure could be discerned. In (1959) Brenner and Horne by the help of the negative staining technique, the details of ultrastructure were revealed, and viruses can be classified on morphological grounds. Originally, filterability was just a simple means of separating bacteria from viruses. If a bacteria free filtrate of a preparation was found to be infectious then there was a distinct likelihood that a virus was present. The development of collodion membrane filters of varying pore size by Elford (1931) and his colleagues at the National Institute for Medical Research in