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التوثيق الالكتروني والميكروفيلم

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Conjunctival Swab Culture in Diabetic Retinopathy Patients

Thesis

Submitted for Partial Fulfillment of Master Degree in Ophthalmology

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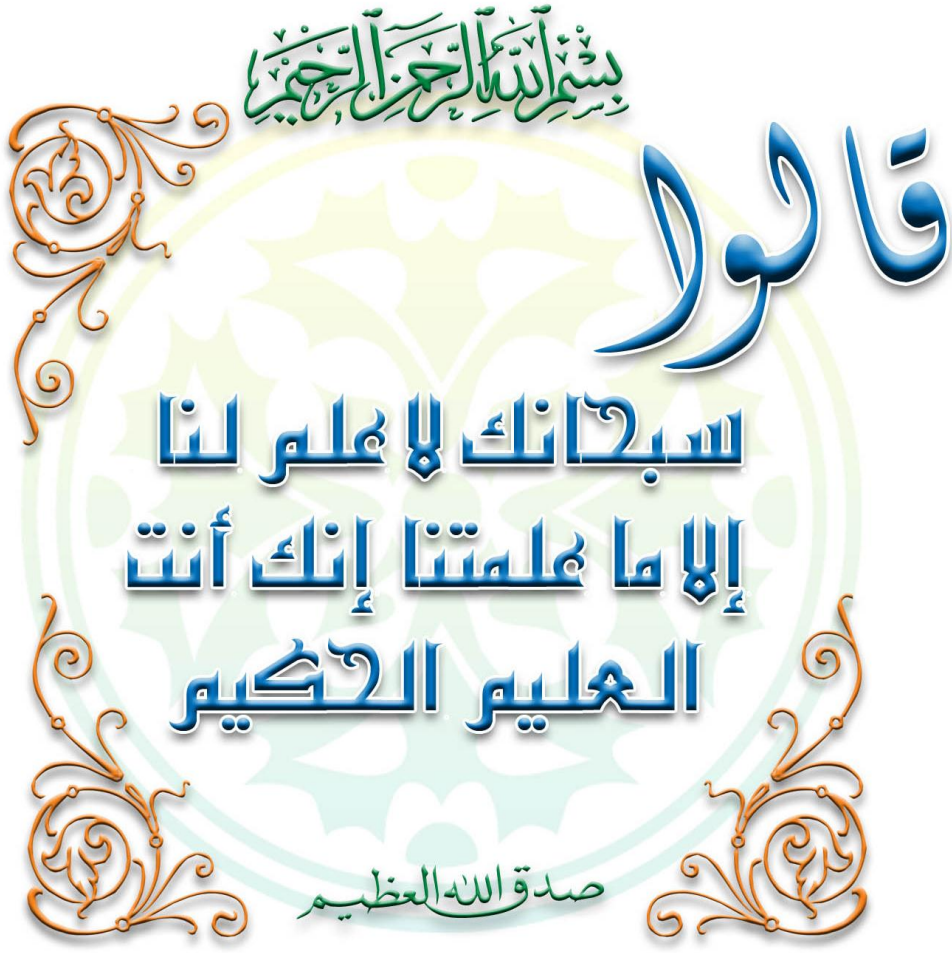

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List of Abbreviations

Abb.	Full term
BSMMU	Bangabandhu Sheikh Mujib Medical University
CWS	Cotton Wool Spots
CONS	Coagulase negative staph.
DFA	Direct fluorescent antibody
DR	Diabetic retinopathy
ELISA	Enzyme-linked immunosorbent assay
ETDRS	Early Treatment Diabetic Retinopathy Study Research Group
HA	Haemorrhages
HSV	Herps simplex virus
MA	Microaneurysms
ME	Macular edema
Npdr	Non proliferative diabetic retiopathy
NV	Neovascularization
OHG	Oral hypoglycemic
OPL	Outer plexiform layer
PAS	Periodic acid-Schiff
PCR	Polymerase chain reaction
PDR	Proliferative diabetic retiopathy
RNFL	Retinal Nerve Fibre Layer
Staph CONg	Staph coagulase negative
VA	Visual acuity
VZV	Varcilla zoster virus
WESDR	Wisconsin Epidemiologic Study of Diabetic Retinopathy

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INTRODUCTION

Eyelids and conjunctiva harbor a significant number of bacteria from the external environment and are called normal flora. They play an important role in normal body functions and health by secreting bacteriocins and chemical mediators to maintain surface homeostasis and immunoregulation. They prevent colonization by pathogenic organisms. [1]

Some members of the conjunctival flora play a pathogenic role in diabetes mellitus when immune function is compromised, which may lead to serious infection. [2]

Diabetes, a lifelong progressive disease, is the result of body's inability to produce insulin or use insulin to its full potential, and is characterized by high circulating glucose. [3]

Diabetes is a chronic disease and sustained hyperglycemia attacks both microvessels and macrovessels throughout the body. Diabetic retinopathy, a disease of the retina, is the leading cause of acquired blindness in working adults. The microvasculature of the retina is damaged, the blood vessels swell and leak fluid, and if not prevented, new vessels start to grow, and ultimately lead to the detachment of the retina. [3]

In the development of diabetic retinopathy, the basement membrane thickens, the blood flow is altered, and pericytes and

endothelial cells undergo accelerated apoptosis resulting in pericyte ghosts and acellular capillaries. The leukocytes become less deformable, and retinal leukostasis is increased affecting endothelial function. (4)

Diabetic retinopathy can be classified into two stages: nonproliferative and proliferative. The earliest clinical signs of nonproliferative diabetic retinopathy are microaneurysms and retinal hemorrhages. Development of cotton wool spots, venous beading and intraretinal microvascular abnormalities are hallmarks of progressive capillary non perfusion. (5)

Neovascularization on the surface of the retina and optic disc in conjunction with further retinal ischemia signifies the presence of proliferative diabetic retinopathy. (5)

The identification of bacteria in the laboratory is particularly relevant in medicine, where the correct treatment is determined by the bacterial species causing an infection. Consequently, the need to identify human pathogens was a major impetus for the development of techniques to identify bacteria.(6)

The Gram stain, developed in 1884 by Hans Christian Gram, characterises bacteria based on the structural characteristics of their cell walls.(7)

The thick layers of peptidoglycan in the "Gram-positive" cell wall stain purple, while the thin "Gram-negative" cell wall

appears pink. By combining morphology and Gram-staining, most bacteria can be classified as belonging to one of four groups (Gram-positive cocci, Gram-positive bacilli, Gram-negative cocci and Gram-negative bacilli). Some organisms are best identified by stains other than the Gram stain, particularly mycobacteria or Nocardia, which show acid-fastness on Ziehl–Neelsen or similar stains.[8] Other organisms may need to be identified by their growth in special media, or by other techniques, such as serology.[9]

Culture techniques are designed to promote the growth and identify particular bacteria, while restricting the growth of the other bacteria in the sample. Often these techniques are designed for specific specimens. [9]

The choice for the prophylactic topical antibiotic is influenced by factors as spectrum of bacteria covered, the rapidity with which the antibiotic eliminates bacteria from the conjuctival surface, the duration of action, the penetration and toxicity of the antibiotic, the antibiotic susceptibility pattern and the cost.[10]

To reduce the risk for postoperative infectious endophthalmitis, the primary intraoperative objective is to minimize entry of organisms into the anterior chamber.[11]