The Role of Campylobacter in Reactive Arthritis

Thesis
Submitted for partial fulfillment of
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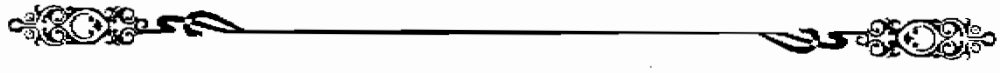
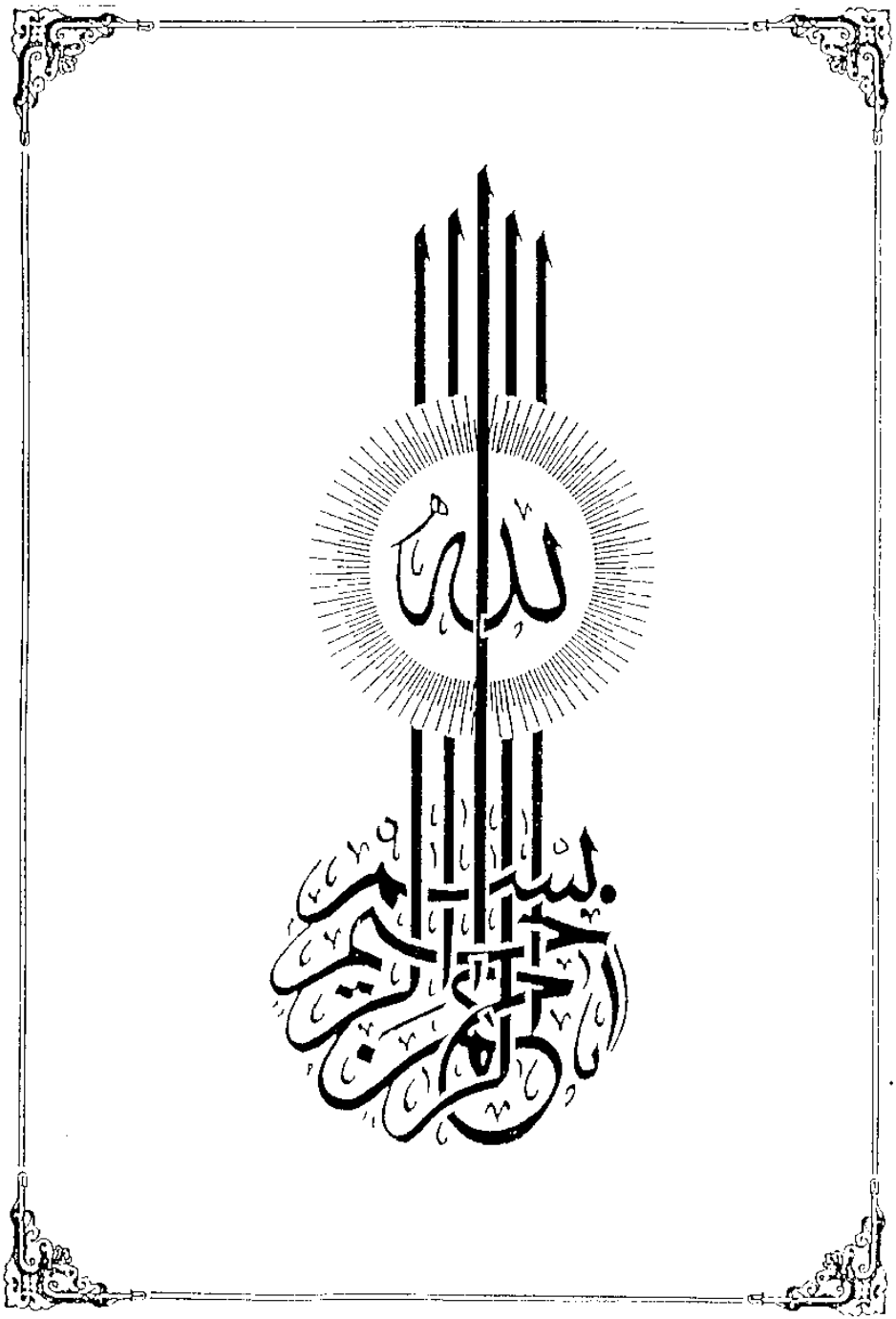
بسم الله الرحمن الرحيم

وفوق كل ذي علم عليم

صدق الله العظيم





جامعة عين شمس
الكليـــة:

صفحـــة العنـــــوان

أســـــم الطالـــب : .....
الدرجـــة العلميـــة : .....
القسم التابع لـــــه : .....
أســـم الكليـــــة : .....
الجامعـــــــة : .....
سنـــة التخـــــرج : .....
سنـــة المنـــــح : .....

شـــــروط عامـــــه

يوضع شعـــار الجامعـــة علـــى الغـــلاف الخارجـــى.

جامعة عين شمس

الكليـــة:

رسالـــة ماجســـــتير / دكتـــــوراه

أسم الطـــالب:.....

عنوان الرسالة:.....

أســم الدرجـــة : (ماجستيـــــر / دكتـــــوراه)

لجنـــة الإشـــــراف

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تاريخ البحـــث : / / ١٩

الدراســـات العليـــا

ختـــم الإجـــازة : أجيزت الرسالـــة بتـاريخ /

/ ١٩٩

موافقة مجلس الكلية

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موافقة مجلس الجامعة

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"جامعة عين شمس"
الكليـــة:

شكـــــــر

اشكـــــر الســـــادة الأســـــاتذة الـــذين قامـوا بالأشـــــراف

وهـــم :

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ثـم الأشخـــاص الذيـــن تعـــاونوا معـــى فـى البحـــث

وهـــم :

١) .....
٢) .....
٣) .....

وكـــذلك الهيئـات الآتيـــة :

١) .....
٢) .....
٣) .....

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Dr. Adel Mahmoud.

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INTRODUCTION :-

Reactive arthritis refers to the occurrence of an acute non-suppurative sterile, inflammatory arthropathy arising after an infectious process, but at a site remote from the primary infection *(Cush and Lipsky, 1993)*. After the infectious onset, an immunologically mediated reactive inflammation occurs *(Aho et al., 1985)*. There is no microbial invasion of the synovial space *(Calin, 1992)*.

HLA-B_{27} is strongly associated with reactive arthritis and the duration of symptoms is longer and the manifestations are more severe among HLA-B_{27}-positive patients *(Aho, 1989)*.

The arthritis is mainly mono- or pauci-articular, and asymmetrical. Enthesopathies and dactylitis have been described in about 10% of patients. Extra-articular features are common and mainly affect skin and eyes together with manifestations due to the triggering infection *(Mielants and Veys, 1993)*.

Arthritis following intestinal bacterial infections was first reported in 1916 by Reiter and Fiessinger and LeRoy. Certain bacteria have been more commonly found to cause reactive arthritis e.g. certain strains of

Salmonella, Shigella, and Yersinia enterocolitica. More recently, an association between reactive arthritis and intestinal infection with Campylobacter jejuni has been reported *(Bremell et al., 1991)*.

AIM OF THE WORK :-

The aim of this work is to study the role of Campylobacter jejuni in reactive arthritis and to investigate its association with HLA-B_{27} in Egyptian patients. Also, to study the relation between Campylobacter jejuni induced reactive arthritis to rheumatoid factor and hidden rheumatoid factor.

Review of Literature

Bacteriology of Campylobacter

HISTORICAL BACKGROUND :-

Campylobacter species have been known to cause abortion in cattle and sheep since the initial isolation of Vibrio fetus (now called Campylobacter fetus) in 1909 *(Simbert, 1978).*

In 1947, Vibrio fetus were first cultured from a person, and over the next ten years these organisms were occasionally isolated from blood, cerebrospinal fluid and other body fluids, and from abscesses. Most of the affected patients were elderly or were debilitated by alcoholism, malignant disease, diabetes mellitus, or cardiovascular diseases. Because Campylobacter fetus caused systemic illness predominantly in compromised hosts, it was considered an opportunist *(Blaser and Reller, 1981).*

King, (1957) recognized that there were two groups of Vibrio fetus isolated, each with distinct serologic and biochemical characteristics. She called the organisms that grew best at 42°C "related Vibrios" and noted that although the organisms were isolated from blood cultures, in each case, the patient had had a preceding diarrheal illness. King postulated that the related Vibrios caused acute diarrheal illness but could not be isolated from fecal specimens because they were slowly growing and fastidious.

Using a selective medium, *Dekeyser et al., (1972)* succeeded in isolating related Vibrios from stools of patients with diarrhea.

Because, Vibrio fetus and the related Vibrios did not ferment glucose and differed fundamentally in DNA composition from Vibrio species, Véron and Chatelain proposed the new genus Campylobacter ("Campylo" means curved and "bacter" means rod) *(Véron and Chatelain, 1973)*. Under their schema, King's related Vibrios became Campylobacter jejuni and Campylobacter coli, and the opportunistic organisms became Campylobacter fetus subsp. fetus *(Blaser and Reller, 1981)*.

TAXONOMY OF CAMPYLOBACTER :-

Since Campylobacter jejuni and Campylobacter coli differ only slightly in phenotypic characteristics *(Skirrow and Benjamin, 1980)* and Campylobacter jejuni is found more commonly in human beings, both are referred to collectively as Campylobacter jejuni. King's related Vibrios have also been called Campylobacter fetus subspecies jejuni, whereas the opportunists were termed Campylobacter fetus subsp.. intestinalis, but these names are no longer approved *(Blaser and Reller, 1981)*.

In 1973, Véron and Chatelain described a system of classifying Campylobacteria that forms the bases of the current

classification system. They reported that the genus Campylobacter family spirillaceae contains three species;

- C. fetus
- C. jejuni / coli.
- C. sputorum.

• The first species (Campylobacter fetus);

Campylobacter fetus included three subspecies.

A) C. fetus subspecies fetus (the same as Vibrio fetus subspecies intestinalis of ***Florent 1960***).

B) C. fetus subspecies venerealis (the same as ***Florent 1960***).

C) C. fetus subspecies venerealis biotype intermedius.

• The second species (Campylobacter jejuni/coli):-

Campylobacter jejuni / coli included two subspecies, C jejuni and C. coli, both represented the related Vibrios of ***King, (1957)***.

• The third species (Campylobacter sputorum):-

Campylobacter sputorum included two subspecies, C. sputorum subspecies sputorum and C. sputorum subspecies bubulus.

In *1977, Skirrow* confirmed that one species, C. jejuni is a major etiological agent of human enteritis. This constituted the stimulus for an