A Study Of The Prevelance Of Chronic Salmonellosis In Cases Of Chronic Cholecystitis

Thesis Submitted

By

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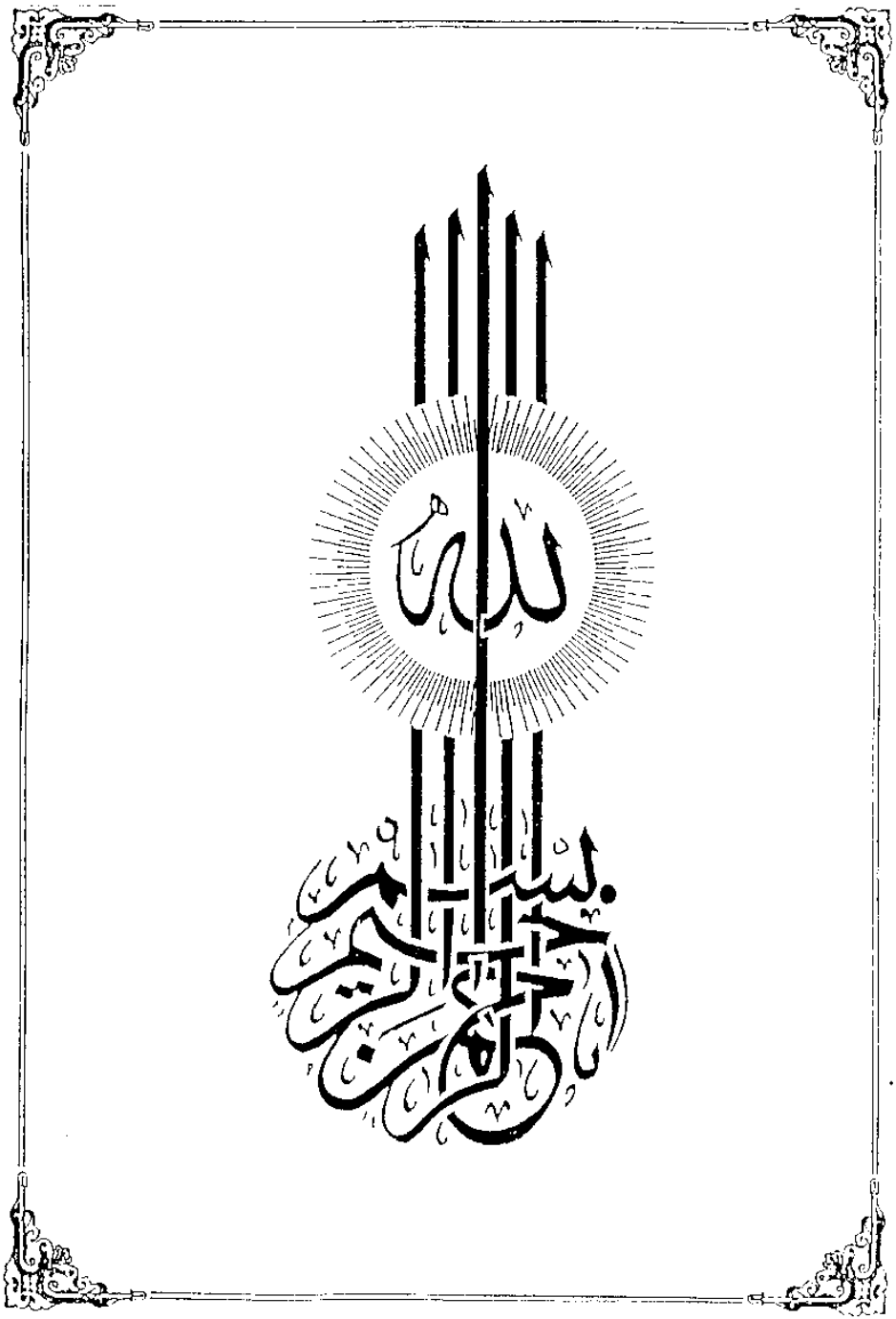

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INTRODUCTION

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Typhoid fever is a serious enteric infection in Egypt. [illegible] 1975). Typhoid organisms can infect gall-bladder of man [illegible] blood-borne or may even through the liver. (Christie [illegible].

Chronic cholecystitis is a common disease in tropical [illegible] laimani et al 1986).

Chronic salmonellosis is a well known condition in tropical countries, either the patient is a chronic faecal carrier or a chronic urinary carrier (Farid et al 1979). In this work we try to detect the prevelance of chronic faecal carriers in cases of chronic cholecystitis. A twenty cases of cholecystectomized patients were chosen on the base of having a positive history of typhoid fever, at least since 12 months ago.

All the gall-bladders and also five stool specimens from five of the patients were subjected to repeated cultures and subcultures. The technique and results of the work will be discused in the proceeding pages.

Aim Of The Work

To evaluate the prevelance of chronic salmonella carriers in cases of chronic cholecystitis.

TYPHOID FEVER

Introduction :-

Typhoid fever is world wide in distribution and is particularly prevelant throughout the tropics where it is one of the common causes of fever.

In Africa mainly, typhoid is present. Paratyphoid A occurs in Eastern Europe, U S A, Far East and India. Paratyphoid B occurs in North America. Paratyphoid C is wide spread in Guyana and is also found in Eastern Europe. (Manson et al 1982).

Hassan et al (1975) stated that typhoid fever is a highly significant endemic communicable disease in the Middle East and is one of the most serious enteric infections in Egypt.

The specific syndrome of typhoid fever is caused by the obligate human pathogen Salmonella typhi. Other enteric or paratyphoid fevers are similar to typhoid but are generally less severe. (Overturf et al 1981).

The salmonella are gram negative non sporing bacilli about 2-4 X 0.5 um, actively motile with numerous long peritrichous flagella.

They do not possess a capsule and most strains are fimbriated.

They grow well on ordinary media and form pale or colourless colonies on Mac Conkey's medium, since they do not ferment lactose. (Manson et al 1982).

The salmonella grow best at 37°C and can survive frozen, in sterile water and drying for several weeks. They are killed by exposure of 60°C for 15 minutes and rapidly by boiling.

The typhoid bacilli has three antigens :-

O- Somatic or body antigen.

H- Flagellar antigen.

Vi- Coating antigen and responsible for virulence.

The bacteria may be in a smooth virulent phage or a rough non virulent variant, although this is not always the case. (Hackstop 1[illegible].

Prevelance :-

As the prevelance, the incidence rate in Egypt declined from [illegible] morbidity rate per 100,000 population in the year [illegible] rate of 60.9 per 100,000 population in 1965. (El-Akkad 1970).

Mortality rate of typhoid fever is about 1% in average. The incidence of typhoid fever is higher in towns and cities than in villages. One of the explanation is the fact that in towns people share others in the same source of food, milk and water supply, while in villages usually each house has its own food and milk supply so if any source is contaminated , infection will be limited to very few number of cases.

Statistical recirds showed that while about 10,000 cases discovered in Cairo, only two cases were discovered in [illegible] in the year 1965. (Kent et al 1970, El-Akkad 1970).

Typhoid and paratyphoid occur all the year round but [illegible] runs a seasonal rise during May and it reaches its peak in August then it declines again. In years where summer months are [illegible] a second wave of rise is expected in October as had happened in 1964 and 1966. (El-Akkad).

Source Of Infection :-

The human population is the reservoir as well as the [illegible] host for salmonella typhi. (Levine et al 1982). The source of infection is human excreta harbouring the organism but this

probabbly true for the paratyphoids but other salmonella species for example salmonella typhi marium infect many animales which may act as a reservoirs. Every one becomes infected with enteric organisms excrete them at the same time or other. Where no symptoms or clinical signs develop, the individuals are classified as symptomless excreters.

Most individuals who have clinical typhoid stop excreting the organisms within three months of the onset. Those who continue to excrete after three months are usually defined as carriers. (Macgraith et al). In general 2-5% of all individuals who develop clinical or subclinical infection with S.typhi become chronic gall-bladder carriers and they lead to maintenance of the disease. (Levine et al 1982).

There are three types of carriers :-

1- Convalescent carrier, which passes bacilli in the excreta up to six months after an attack of typhoid fevr.

2- Chronic faecal carrier , which continue to pass the bacilli for one year in an intermittent manner . The faecal germs , gall-bladder and the bile ducts being the seat of chronic infection, gall stones and chronic cholecystitis may occur.

3- Chronic urinary carriers especially with Schistosoma mansoni infection. (Hathout 1970, Watson et al 1966).

Also if the patient continues to excrete the bacilli for a period of infection. He is called a temporary carrier. (Macgraith et al).

Women are three times more likely than men to become carriers probably because of the compromises in the function of the gall-bladder secondary to the hormonal effects which occur during pregnancy. (Hann 1985). Many examples of typhoid carrier state have been attribu-

establishment of infection either in the gall-bladder or in the liver itself. Patients may be asymptomatic or present with a clinical picture similar to that of cholecystitis, suppurative cholangitis or liver abscess. Occassionally infection can persist in the gall-bladder for long periods. There is one report of infection persisting for 42 years. (Alberti et al 1979).

Spread Of Infection :-

The carrier is a danger to the community unless there is an efficient water carriage system of sewage disposal. Bacilli present on hands of the carrier can be transferred by many vehicles, S.typhi typically mainly by water and S.paratyphi A&B by foodstuffs. All the enteric group can spread by ice cream. (Christie 1980, Manson et al 1982).

The organisms discharged in faeces and urine dissiminated into water, milk or other food stuffs, infection follow ingestion of contaminated materials.

Typhoid and paratyphoid organisms will remain alive in water for days. If the water is clean they will not multiply but oxygenation and the presence of organic materials will assist their growth. Typhoid bacilli may persist for 3-4 weeks in sewage, and have been recovered from sea water. (Waldman et al 1974 Macgraith 1984).

Outbreak of typhoid are often water-borne although the organism is usually present in small numbers except in gross infections. Shellfish grown in sea water pollution may act as a source of infection because they concentrate water in the process of feeding. Many out breaks results from milk and milk products consumption. Also flies may play a role by carrying the bacilli on their feet and proboscis. (Macgraith 1984).

It is stated that S.typhi may persist 38 days while S.paratyphi B for 21 days in sewage in spite of they are subjected to competition with other organisms but sewage is continually replenished with typhoid or paratyphoid organisms if there are carriers or cases in the area. If sewage from coastal towns is deposited crude & untreated into the sea, the beaches and coastal waters are subjected to pollution which may be heavy or light according to the current, tides & the site of the sewer outfall. In spite of all that there is no evidence that the percentage of infected bathers exceeds that of the inlandinhabitants. Sea water is rapidly bactericidal to S. typhi but there may be to the amout of sewage pollution where our coastal waters can deal with. (Khalil1979, Christie 1980).

Immunology:-

Humoral immunity is indicated by the presence of IgG and IgM antibodies which are not protective & cellular immunity by the granulomatous response in the typhoid nodule and the granulomatous pneumonia found in prologed typhoid.

An attack leads to some immunity which is not solid because another attack can occur but in a lesser extent than unimmunised persons. The earliest serological response in acutetyphoid fever is said to be a rise in the somatic O 'IgM' antibody titre. The flagellar H'IgG' antibody usually develops more slowly but persists longer than the O antibody. At the end of the first week titres of either antibody may be as high as 1/160. (Abdel Wahab1979, Manson et al 1982).

Pathology:-

Acute salmonella gasteroenteritis is most often caused bysalmonella other than salmonella typhosa, it presenta an acute gasterointestinal disorder 12-24 hours after ingestion of theorganisms. The small bowel especially the ileum is most frequently affected but the stomach and colon may be affected. The small intestine is often dilated , the serosa is erythematous and fibrinous exudate may be

present, in severe casases the mucosa is erythematous, the lumen contains mucopurlent exudate, gas or bilious liquid chume.

The pattern is that of acute catarrahal enteritis , acute mesenteric lymh-adenitis and acute septic slenitis. This non specific pattern may show more histiocytes than might be expected, but this not sufficient to specifically diagnose salmonellosis. Diagnosis is certain only after immunofluorescent staining and or bacterial culture. (Smith 1970).

In enterica the course of the disease progresses through five stages :-

1- Period Of Incubation :-

The anatomic alteration consists of a mild inflammation of the lamina propria of the small intestine with mild mesenteric lymh node hyperplasia & lymphadenitis, these inflammatory infiltrates do contain neutrophils but other cells e.g. histiocytes, plasma cells & lymphocytes predominate.

2- Period Of Invasion :-

Mild endotoxin lesions of the liver & spleen hyperplasia [illegible] histiocytic infiltration of the lymphoreticular sustem & catarrhal enteriti..

3- Fastiguim :-

It is stage of necrosis though ulceration begins late in this stage. Zenker's degeneration of straited muscles may be severe and is almost often found in muscles which remain active while the patient lie in bed, " the intercostals diaphragm, rectus abdominis and the thighs. This degeneration may cause muscle rupture and haemorrahge which in the rectus abdominus muscle may simulate acute abdomen.

Microscopically the typhoid nodules are larger and may be centrally necrotic. It may be seen in the liver, bone marrow, spleen kidney, testis and parotis glands.

4- The Stage Of Lysis :-

It is marked sloughing of necrotic Peyer's patches, endotoxin effects and the early stages of tissue repair.

5- Convalescent Stage :-

The extenal appearance of the intestine return to normal, granulation tissue and reepithelisation occur, scarring and distorsion of the in testine rarely occur. (Spencer 1973, Smith 1970).

Infection is by ingestion, the organism pass from the small intestine via the lymphatics to the mesnteric glands and after multiplication they invade the thoracic duct. The liver, gall-bladder are infected and from the gall-bladder a further invasion of the intestine results. The gall-bladder and bile ducts which maintain the source of infection may be affected but the carrier state may be associated with chronic cholecystitis & gall stones , while chronic cholecystitis is not common in most tropical areas. (Manson et al 1982). The kidney shows cloudy swelling, the myocardium shows fatty degeneration also pyogenic meningitis may occur. Osteomyelitis of the long bones occur years after infection, the vertebrae may be affected with development of typhoid spine. Osteomyelitis complicating typhoid occurs more in children with sickle cell disease. (Edington et al 1976, Mc leod John 1974) In paratyphoid fever the small intestine may be acutely inflamed throughout its length. In paratyphoid C septicaemia is common and deep metastatic abscesses are found. The organism may be recovered post-mortem from intestinal lesions, enlarged lymphatic glands, spleen, gall-bladder, heart, blood, and other tissues. (Huckstep 1962, Manson et al 1982, Christie 1980).

Clinical Features :-

Salmonella infections in man present a spectrum of clinical syndromes of

1- Enteric fevers "typhoid or paratyphoids" .

2- Acute gasteroenteritis.

3- Bactereamia.

4- Localized infection, which may occur at almost any site.

In addition asymptomatic intestinal carrier states are common. Occasionally a focus of infection persists in the gall-bladder or urinary tract to produce a chronic carrier state. (Thorn et al 1977).

The usual incubation period of all enteric infections is 14 days but may varies from 7-21 days. Also the severit y of the disease varies much. (Manson et al 1982). There is some evidence that when the disease is water-borne the incubation varies from as little as 48 hours in food associated outbreaks to as long as 30 days in water-borne infections; this may be due to small number of organisms likely to be present in water-borne infections. (Christie 1980, Overturf et al 1981). Shorter periods of 4-5 days only are not uncommon especially when S.paratyphi B. is the infecting agent and vehicle a highly favourable one as milk or ice-cream. (Christie 1980).

Symptoms :-

The onset is normally insidious with malaise as a vague but typical presenting symptom. Chills are another indifinite but characteristic symptom, rigors are not uncommon. The patient usually has nagging & persistant headache rather than severe but sometimes intense enough to suggest meningitis. Pain in the body, insomnia, malaise and anorexia may accompany it usually amount to discomfort rather than severe pain. (Manson et al 1982, Christie 1980). But the onset may be sudden with rigors and convulsions which simulate influenza, typhus and malaria. (Hathout et al 1979). Epistaxis is commoner in typhoid than paratyphoid. Abdominal discomfort is common but abdominal pain is rare, occassionally the patient has quite sharp abdominal