A STUDY OF CLINICAL AND BIOCHEMICAL
ASPECTS OF GALLSTONE DISEASE IN
SUDANESE AND EUROPEANS.

By

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Dedicated to my Wife and Children
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Gallstones have been known to occur since times immemorial, and were found in ancient mummies.

Silvius first observed gallstones in 1517. In 1571 Santile de Falingo, Professor of Medicine in Padua, reported a human gallstone as one of his autopsy findings. In 1859, Golonbo found stones in the body of Saint Ignatius, founder of the Jesuit Order (Sadek, 1964, Glenn, 1966). About the year 2000 B.C., the Babylonians described the gallbladder, the hepatic and the common bile ducts. A clay model of a sheep's liver from that period is on display at the British museum. Such models are believed to have been used by priests for instruction of their students.

Babylonian medicine was magico-religious (Singer and Underwood, 1962). For many centuries, the liver was regarded as the seat of the soul, and the profound gravity of Prometheus' punishment in ancient Greek mythology can be appreciated in this light, condemned as he was, through eternity, to have his liver plucked at by vultures.
Alexander Trilliomus, a Greek physician of the 5th century, noted calculi in the hepatic radicles of a human liver. Rhazes, a Persian physician of 900 A.D., described gallstones in oxen, and stressed their value in the treatment of epilepsy (Glenn, 1971).

Accurate knowledge of disease conditions of the gallbladder could not be gained until it was possible to make postmortem examinations. Recent surveys have shown that operations on the biliary tract, the majority of which are for gallstones, are very common in large hospitals all over the world. In "developed countries, gallstones are present in at least 20% of all women over the age of forty (Rains, 1963). In men, the incidence is reported to be less, but it seems to increase with age, and by the 7th or 8th decade reaches 20%. It may be said that gallstones occur in 20% of both sexes in old age. The time-honoured axiom that a typical gallstone sufferer is a woman who is fair, fat, forty and fertile is only partly true (Nakayama and Van der Linden, 1961, Thorbjarnarson, 1959).

The annual statistical report of the Ministry of Health shows that during the year 1974 there were 35440 cases of cholelithiasis and cholecystitis treated all over the Sudan as in-patients or out-patients. The total population
of the country was estimated to be 16,901,000 in 1974. In the same year, a total of 3,606,852 patients suffering from appendicitis, gastritis and duodenitis, intestinal obstruction, liver cirrhosis, and cholecystitis and cholelithiasis were treated. Cholecystitis and cholelithiasis constituted 9.8% of the total.

It is now known that gallstones are fairly common in Sudan. Operations for this malady account for some 10 to 20% of all cold operations in big and semi-big hospitals in Sudan (Jibrash, 1978; Secdy, 1975). The increasing burden of surgery for gallstones is thus obvious in all clinics all over the world. The modern diagnostic methods and advances in surgical facilities have hitherto reduced the morbidity and mortality of biliary tract surgery tremendously. However,

The exact etiology of gallstones still remains unfathomed. While the disease is generally said to be common in affluent societies, in Bogota, Colombia, the poorer classes are most commonly afflicted (Kravetz, 1963). It is probably fair to stress that the future task of scientists lies in discovering ways and means of preventing the formation of gallstones. This task can hardly be accomplished without an exact knowledge of the causation of gallstones.
To try and highlight the possible underlying factors in the causation of gallstone disease in the Sudan. Whatever reasonable information is gleaned from this attempt is bound to facilitate our sailing in a hitherto almost uncharted sea.
The material for this work comprises the following:

1. European patients suffering from chronic cholecystitis who underwent surgical treatment in the surgical unit, U.C.H. Medical School of London between October 1971 and October 1972.

2. European patients suffering from chronic duodenal ulceration who were operated on in the above mentioned centre during the same period. These constituted a control group.

3. Sudanese patients with chronic cholecystitis who underwent surgical treatment in Omdurman Hospital during the period from July 1973 to January 1975, inclusive.

4. Sudanese patients operated on for ailments other than biliary tract disease in Omdurman Hospital during the same period. These constituted a control group.

5. Mongrel dogs subjected to experimental work.

6. Bile from the gallbladders of cattle.
1 European Patients:

1. Patient Material:

52 European patients were admitted with gallstone disease in the Surgical Unit of U.C.H., Medical School, London. There were 34 females and 18 males. The age and sex distribution of these patients is given in the results section. 21 out of 34 female patients had children; the rest were nulliparous. Of the 52 European gallstone patients, 3 had previous gastric surgery for duodenal ulceration.

2. Symptoms:

49 out of these 52 patients when first seen complained of pain in the right hypochondrium together with dyspepsia and intolerance to fatty foods. The remaining 3 complained of recurrent attacks of vague abdominal pain. Of the 49 patients presenting with pain in the right hypochondrium, only twelve described their pain as radiating to the tip of the right shoulder, especially when the attack was severe. In 18 of the 49 patients, the pain was referred to the back; 10 of those 18 patients were jaundiced when they were first seen.
3. Physical Examination:

On physical examination, there were varying degrees of tenderness in the right hypochondrium in all 52 cases. Nine patients had a palpable liver, and the gallbladder was palpable in 16 patients. Of the latter, only 4 were jaundiced when first seen. In the others, no past history of jaundice could be elicited. Of all 52, the total number of patients who were jaundiced on admission was 12.

Prior to surgery, 42 gallstone patients were subjected to oral or I.V. cholecystography. In the remaining 10, the presence of deep jaundice precluded the use of this diagnostic procedure.

4. Investigative Procedures:

a) Surgical Procedures:

All 52 patients underwent operation where routine cholecystectomy was performed. In the jaundiced patients, exploration of the common bile duct was undertaken as well. All gallbladders removed were sent for histopathology. Liver biopsy was performed in 9 patients — those who had a palpable liver on examination prior to surgery. Operation cholangiography was performed in 20 patients. The main indications for the procedure were the presence of jaundice, the finding of multiple small stones in the gallbladder, the establish-
ment of a diagnosis of common duct stones before or during operation, and the presence of a dilated common bile duct. The contrast medium was injected through the cystic duct into the common bile duct after clamping or ligating the former.

When only cholecystectomy was done, without exploration of the bile ducts, the abdomen was closed with a corrugated rubber drain left at the gallbladder bed and led to the exterior through a stab separate from the main incision. When exploration of the common bile duct was undertaken as well a T-tube draining the bile duct was led to the exterior through a separate stab and connected to a receptacle. Complete haemostasis and reperitonealisation of the gallbladder bed were attained in all cases.

During operation, bile samples were collected from the gallbladder in each case. Using a sterile syringe fitted with a wide-bore needle, and after careful packing, the gallbladder was punctured and emptied of bile as far as was possible. Prior to this the gallbladder was gently and carefully massaged to ensure adequate mixing of its contents. The bile samples thus collected were transferred to labelled sterile containers. These were stored at -18 to -20°C. Thereafter, bile analysis was soon carried out.