THE SILENT GALLSTONE: A TEN TO TWENTY YEAR FOLLOW-UP STUDY OF 112 CASES*

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BECAUSE, SINCE THE ADVENT OF CHOLECYSTOGRAPHY, the problem of the silent gallstone has become an increasingly frequent and, consequently, an increasingly important one, several pertinent questions are being asked. How often are gallstones silent and how often is the physician confronted with the problem of the silent gallstone? What advice should be given the patient who has silent gallstones? Should he be told to undergo cholecystectomy or should he be told to await development of dyspepsia or colic before submitting to surgical treatment? Should he be urged to undergo cholecystectomy after the first attack of colic or after several attacks have occurred?

FREQUENCY OF THE SILENT GALLSTONE

The frequency with which the silent gallstone occurs in the general population is not known. Surveys using cholecystography, so far as we can find, have not been made to determine the incidence. Some idea of its frequency, however, may be gained by consideration of data obtained from necropsy studies. Robertson,[1] in reviewing the records of 1,027 cases in which necropsy was performed and in which gallstones were or had been present, found that in 61 per cent there had been no suspicion by the patient or his attending physician that gallstones did exist. Obviously, given the opportunity of careful questioning by the physician during the patient's life, not all of the 61 per cent would have been classified as cases of silent gallstones but, after taking into consideration this source of error, it seems that the percentage of silent gallstones may well be high. When these data are considered in relation to the finding of Robertson and Dochat[2] that in 16.3 per cent of 16,926 necropsies gallstones were present and that the proportion ranged from 0.1 per cent in the first decade of life to 32.7 per cent in the ninth decade of life, one is impressed not only with the large number of gallstones but also with the large number of silent gallstones potentially present in the general population.

PREVIOUS VIEWS ON TREATMENT FOR THE SILENT GALLSTONE

There is widespread agreement that surgical treatment is indicated when calculous disease of the gallbladder produces distressing dyspepsia or colic

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and when the complications thereof arise, but agreement that silent gallstones require surgical treatment is lacking. This has been true both in the early years and since cholecystography has permitted such a diagnosis frequently. Before 1924, the remarks of Kehr,[3] W. J. Mayo[4] and Osler[5] summarize the several attitudes of the day toward the silent gallstone. In 1901 Kehr stated that "quiet lying gallstones are no subject for treatment, for a persistent latent stage is almost as good as a cure." On the other hand, in 1911, W. J. Mayo said: "Ten years ago we heard a great deal about 'innocent' gallstones which meant that gallstones existed without symptoms and that their presence was not suspected until postmortem examination brought them to light. . . . That temporary palliation can be procured with nonoperative treatment cannot be denied, but the cure of the patient can only be brought about by surgical means." Osler[5] in the following year, 1912, said that surgical treatment of the gallbladder was indicated "after repeated attacks of colic, in the presence of a distended gallbladder associated with attacks of pain or fever, and a stone in the common duct."

Since 1924 and the introduction of cholecystography by Graham and Cole the same variations in attitudes toward treatment of the silent gallstone may be found. White,[6] in 1928, stated that "many silent gallstones show a gallbladder wall that is bacteriologically negative. Cholesterol stones especially lie dormant for years. Surgery should be based on symptoms, not on the mere presence of stones or low grade infection. I believe that most patients escape perceptible injury to other organs." Mason and Blackford[7] said in 1932: "We fear that occasionally surgical relief is advised because of refinements in the interpretation of symptoms together with new methods of diagnosis of gallbladder disease, rather than because of the former clinical symptoms." Musser[8] concluded in 1934 that "it is doubtful if interference is indicated for the first or even the second biliary colic if evidence of infection is lacking." Andrews[9] said in 1936, "I think the operation on silent gallstones is a scandal."

On the other hand, Lahey[10] in 1938 expressed the conviction that there are no harmless gallstones "and that because of the above dangers [acute cholecystitis and biliary obstruction] all gallstones should be removed. It has frequently been urged and practiced that a proper attitude to take toward gallstones is that operation should not be undertaken until they produce symptoms. If one deals with gallstone patients in large numbers one cannot help being impressed with the fact that this philosophy results in many situations and in many fatalities which would not have occurred had the operative procedure been undertaken earlier." Cheever[11] shares Lahey's opinion that "there are no harmless gallstones . . . that cholecystectomy should be advised unless special contraindications exist when the diagnosis of gallstones is made." Carter, Greene and Twiss[12] in 1939 said that "in every instance in which stones can be demonstrated to be present, surgery is indicated to prevent the dangers of acute ulcerative cholecystitis."

Fitz[13] in 1942 expressed the belief that the "most judicious therapy of 'silent' gallstones may be different than in their later stages of symptomatic activity. . . . The very ease with which gallstones can now be recognized

by cholecystography may lead to errors in therapeutic judgment. . . . It is not harmful to follow patients with 'silent gallstones' for a time before advising surgery, and it may be helpful."

It is interesting to compare the views on this problem as stated in "Nelson's new loose-leaf surgery" and "Nelson's new loose-leaf medicine." Whipple,[14] writing in the former, concluded that "if the gallbladder is the seat of definite chronic inflammation and especially if the chronic inflammation is associated with gallstone formation, surgery is the only therapy that offers permanent and satisfactory cure." Writing in the latter, Miller and Machella[15] stated that "opinion is divided as to the propriety of operating in cases of stones in the gallbladder without symptoms and in which the diagnosis is made accidentally. Since such patients have gone through a long life without digestive symptoms, one would seem to be justified at least in postponing surgery until some symptoms develop."

Meakins'[16] stand on this question should be considered. Concerning gallstones, he expressed the belief that "their removal by operation is not indicated for the first, second, or even several attacks of colic. There may be lengthy intervals and the disability of an occasional attack may be relatively insignificant compared to the risk of operation, which is not inconsiderable, particularly in elderly people affected with diabetes, obesity, hypertension, and myocardial degeneration, all or any of which are commonly associated with gallstones." Christian,[17] in Osler's "The Principles and Practice of Medicine," expressed a view similar to that of Meakins: "The decision for or against surgical treatment should be made in the course of repeated attacks; the single attack requires operation only in the unusual case of steadily increasing severity and evidence of severe infection. There are many patients in whom the symptoms are slight, for these surgical treatment is not indicated. . . . It is rare that cholecystectomy is advisable for the first attack, even though it is severe and typical. The present author has long followed the policy just stated; in his patients it has led to no serious consequences that would have been avoided by early cholecystectomy. . . ."

Watson,[18] writing in Cecil's "A Textbook of Medicine," introduced another factor. He wrote, "In the usual case, however, cholecystectomy is indicated because of the many serious complications which gallstones may produce. . . . Furthermore, the important relation of cholelithiasis to the occurrence of primary cancer of the biliary tree must be taken into account."

Finally, the opinion of Clute and Kenney[19] (1944) is that "in the great majority of simple or silent gallstones an early elective cholecystectomy is wiser than an operation into which one is forced by the complications of the disease."

The wide divergence in opinion regarding the treatment of the silent gallstone probably arises from the lack of accurate data pertaining to the incidence of dyspepsia and colic and of the complication of calculous disease of the biliary tract in cases of gallstones which are silent when discovered. Data regarding the incidence of the several complications of calculous disease of the gallbladder in large series of patients coming to operation are available

but these data do not apply to the incidence of the several complications in cases of silent gallstones.

It is doubtful whether carcinoma of the gallbladder should be emphasized as a hazard of silent gallstones adequate to demand surgical intervention for its prevention. Not only is carcinoma of the gallbladder relatively rare but also it appears that this neoplasm is found most frequently when symptoms of cholecystitis have been present for many years. Jaguttis,[20] in 1926, reported that cancer of the gallbladder developed in five of his 114 patients who had had symptoms of cholecystic disease for 10 to 25 years. Vadheim, Gray and Dockerty[21] found that symptoms of disease of the biliary tract had been present in their 77 cases of carcinoma of the gallbladder for an average of 14.2 years in 80 per cent of the patients.

Similarly, the incidence of stone in the common duct appears to be related to the duration of symptoms. In a study by Heyd[22] of 1,270 cases in which symptoms of gallstones had been present for two years or less, the incidence of stones in the common duct was 1.9 per cent. In another group of patients in which the symptoms of cholecystic disease had been present for 10 to 25 years, Heyd found the incidence of stones in the common duct to be 16.0 per cent. So long as the stone remains silent, the chances are that its site in the common duct must be small.

DATA OF VALUE IN DETERMINING POLICY ON TREATMENT

To decide for or against surgical treatment of silent gallstone, the physician should have certain information. He should know in how many cases of silent gallstone dyspepsia, and in how many cases colic, appears at a later date. He also should know in how many the complications of calculous disease of the gallbladder develop. Also, it would be of value to know how frequently complications occur with the first attack of colic. Such data would be valuable in establishing the risk to the patient who has silent gallstones of deferring surgical intervention until the first attack of colic, because the mortality of cholecystectomy for uncomplicated disease of the gallbladder is about 0.5 per cent and for complicated disease of the gallbladder, 3 per cent in the hands of an experienced surgeon. These data are needed for evaluation before one is able to decide whether or not a patient who may never have incapacitating dyspepsia, an attack of colic or complications, should undergo a surgical procedure which carries a risk of at least 0.5 per cent.

MATERIAL AND METHODS OF STUDY

In the hope of supplying some of the data not now available but necessary for decision regarding treatment of the silent gallstone, a long-term follow-up study of all cases in which gallstones were found incidentally during the course of some other abdominal operation at the Mayo Clinic was carried out. The records of 998 such cases occurring from 1925 through 1934 were reviewed. Approximately a half of these were discarded as unsuitable for long-term follow-up because the operation had been for cancer. Many others, including those with duodenal ulcer, were discarded because some of the abdominal

symptoms might have been due to the cholelithiasis. Follow-up letters were sent to 184 persons. Replies were received from 115 (62 per cent). Each patient was asked if indigestion or colic had preceded the discovery of the gallstones and several replied that symptoms had been present, so that these, too, were discarded. Finally, 112 cases were considered suitable for study. The average age of the 112 patients was 48.2 years when the gallstones were discovered.

RESULTS OF STUDY

The first report on the course of the calculous disease of the gallbladder in these 112 patients will be given.

In 30 cases indigestion developed and it is assumed that the indigestion in each case was due to the disease of the gallbladder. Under the term "indigestion" are included those cases in which such symptoms as gaseous indigestion, intolerance to certain foods, and heartburn developed, as the only abdominal distress. The severity of the indigestion varied; some patients were bothered occasionally, a few were able to control all symptoms by diet while others felt that the indigestion was incapacitating.

Twenty-one patients reported colic; more than half had experienced more than one attack of colic, but several who had had frequent and severe attacks of colic found that sooner or later the attacks had subsided so that they had had no symptoms whatsoever for years. Five of the 21 patients had both colic and jaundice; of the five, four had had slight jaundice which followed an attack of colic and was transient only. The fifth patient underwent operation immediately after the first attack of colic and jaundice.

In a total of 51 (45.5 per cent) of the 112 cases symptoms developed. In 24 of these 51 cases cholecystectomy was performed. Three of the 24 patients died postoperatively. The death of the patient who underwent operation at this clinic was due to pulmonary embolism. Of the two who underwent operation elsewhere, one death was reported by the patient's relatives to be due to subphrenic abscess and the other to a "weeping" liver. In 61 (54.5 per cent) of the 112 cases abdominal symptoms did not develop before death or have not developed since the discovery of the gallstones.

It is of interest that 28 of the patients have died. Of the 28, 21 did not, so far as can be ascertained, experience symptoms prior to death but seven did so. The cause of death was unknown in four cases, while death was due to cancer in six, to heart disease in five, to infectious disease in five, to cerebral accident in four, to amputation of the leg in one, and followed cholecystectomy in three. In not one of the six cases in which the patient died of cancer was the gallbladder the seat of the cancer.

COMMENT

Although we recognize the limitations of the information obtained by follow-up letters, none the less, this study furnished interesting and thought-provoking data. Although these data do not give conclusive information about the risk of nonoperative and operative treatment of the silent gallstone,

they are noteworthy on this basis: that the patient with silent gallstone may be told that he has about an even chance that symptoms will develop, that he has about one chance out of five that painful seizures will develop and a small chance that jaundice will develop within ten to 20 years. In addition, he should be told that the risk of surgical intervention at the best is about 0.5 per cent when cholecystectomy is performed before complications develop, that the risk will increase to about 3 per cent if he defers surgical intervention until complications develop, or old age and physical debilities appear, but that the increase in risk is counterbalanced by the fact that if he defers surgical intervention he may never require operation. It is not possible on the basis of information now available to tell the patient whether the risk is greater or smaller if operation is performed while the gallstones are silent than if it is postponed until symptoms develop. Certainly, the mortality rate will be low regardless of the choice made.

The reaction of the patient to his problem will be an important determining factor. Many patients will prefer to have gallstones removed in order to eliminate the threat of painful seizures or severe complications. Others, knowing the higher risk of surgical intervention should complications develop, will prefer to take the chance that no symptoms will develop. Surgical treatment of the silent gallstone may be classified as optional or elective surgery, but surgical intervention should not be postponed after symptoms, and more especially after attacks of colic, appear.

CONCLUSIONS

Developments over a period of ten to 20 years in 112 cases of silent gallstones have been ascertained. In 61 cases symptoms did not develop. In the 51 cases in which symptoms occurred, 30 patients complained only of dyspepsia and 21 experienced painful seizures. Five of the 21 patients experiencing painful seizures also had jaundice.

Cholecystectomy may be advised but need not be urged, if the patient prefers to accept the chance of experiencing painful seizures or the increased risk of surgical treatment in the event the complication of calculous disease of the biliary tract appears.

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