

tectomy under these circumstances must be highly individualized. First, a careful history must elicit the symptoms of true biliary colic with some relation to food ingestion. Other diseases of the gastrointestinal tract must be ruled out; the patient's overall psychological makeup and their home and job situation should be known.<sup>7</sup> At least one standard oral cholecystogram which clearly visualizes the gallbladder must be performed before undertaking cholecystokin cholecystography. All of the patients in this series had at least two oral cholecystograms, and some had had several more than that with the highest number of oral cholecystograms performed on a single patient being five. When discussing the operation with a patient, it must be clear that the patient's symptoms may not be alleviated by the operation although as indicated from the results in this series the chances are good that relief will be obtained.

Cholecystokin cholecystography is not the only test available for the diagnosis of occult or otherwise inapparent gallbladder disease. Bile discharged into the duodenum after the administration of cholecystokin can be collected and examined for cholesterol crystals, leukocytes, and bacteria all of which may be indicative of gallbladder abnormality. Examination of duodenal bile is an old method of detecting gallbladder disease but the addition of cholecystokin stimulation of gallbladder contraction has increased the sensitivity of the test.<sup>5-7,14</sup> It may be used in conjunction with the roentgenographic studies. In the patient with persistent symptoms further diagnostic techniques may be necessary to establish a diagnosis, *e.g.* endoscopy, retrograde pancreaticholangiography or even angiography. Persistence of symptoms in three of the ten patients with symptoms suggesting biliary tract disease but normal oral and cholecystokin cholecystography eventually led to tests which demonstrated significant lesions.

The intent of any of these diagnostic maneuvers should be not only to detect biliary tract abnormalities

correctly but also to aid in the identification of patients whose psychosomatic illness is manifest as biliary colic. It is as important to diagnose motor dysfunction of the gallbladder which can be effectively treated by cholecystectomy as it is to identify those individuals who should not be operated on, and cholecystokin cholecystography seems to be a simple test which can be used as an additional diagnostic maneuver for those difficult patients whom all surgeons see from time to time.

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### DISCUSSION

DR. MONFORD D. CUSTER, JR. (Winchester, Virginia): I think the reason that Dr. Griffen was kind enough to invite me to preview his manuscript was that some time ago we had the pleasure of sharing a few days at Sea Island, I told him that we have embarked upon a study of some 3000 consecutive cholecystectomies in an effort to identify those among them which were performed for noncalculus disease.

And I really can't tell you very much about this because we're not very far down the road as yet. But I can tell you that the incidence in this series surprised me a little bit, being one in ten. Thus we have 300 such cases, which we have turned over to our Pathology Department for data retrieval.

I can also tell you —and this reassures me a little bit—that the incidence of disease among these is rather reassuringly high, the

disease being almost invariably either cholesterolosis, or mild chronic cholecystitis.

Now, I would loosely guess that perhaps once a year a surgeon who is interested in biliary tract disease will encounter such a patient as Dr. Griffen has described. It's a woman, usually, and she has classic, typical biliary tract symptoms, and they may be of major proportion, in the face of a series of normal cholecystograms and correspondingly negative ultrasonograms.

What one does in this situation is to make an attempt to get to know the patient, and over a period of, perhaps, six months or 12 to make up your own mind as to whether, in point of actual fact, she does have significant symptomatology. And then, having reached that conclusion, you sit down with her, and you tell her that, at least occasionally, there are other noncalculous disorders of the gallbladder which can produce this type of symptomatic trouble.

And you say to her: If you want to take a chance, I'll take a

chance. I like to get a second opinion, and then, with your heart in your mouth, you go to the operating room, hoping to God that this friendly pathologist that Dr. Griffen referred to—if, in actual fact, there is such a person—will give you at least a little something under the microscope.

And I don't know how this is going to turn out, and perhaps by this time next year we will have a correlation between the presence of pathology, or its absence, and the relief of symptoms, or the failure of such.

Now, obviously, what's needed is some sort of diagnostic modality that will help us screen the patients, so that we can recommend cholecystectomy to those patients in whom it offers a reasonable chance of success in terms of relief of symptoms and, by the same token, to protect from useless, needless surgery those in whom it will not.

I have been interested in cholecystokinin cholecystography for about 3½ years, since I heard Dr. Tom Wright report it, and I have during this 3½ year period endeavored to interest our radiologists in including it in their studies. I don't have much influence down there, apparently, because the success so far has been essentially zero. But, Ward, I promise you that I'm going back home tomorrow, and I'm going to mount a new crusade, and I hope that it works.

I want to thank you for bringing to our attention this information, which I think very likely has important practical clinical significance.

DR. EDWARD S. LINDSEY (New Orleans, Louisiana): I am fascinated with the new pharmacologic approach to the diagnosis of these sticky problems as relates to the biliary tract. I think that Dr. Griffen and his colleagues must be identifying those patients with whom we all agonize over the years, and who, indeed, ultimately are found to have abnormal standard cholecystograms, and, yes, even stones. It is noteworthy that he and those who have preceded him in this literature may have suggested a means where we can help these patients earlier.

I differ with him in a measure in what he describes, or suggests, may be the uselessness of ERCP, and, in point of fact, my purpose in getting up here is to suggest that we all focus on the connection between juxta-ampullary diverticular and acalculus biliary tract disease. We have found that this is more common than might have been appreciated. The literature is replete with studies suggesting that those patients with juxta-ampullary diverticula, in fact, have difficulty more commonly with biliary tract disease.

It is time that either we make a commitment to examining the G.I. series of patients with these problems ourselves, or persuade our radiologists to foresake their ho-hum attitude in at least mentioning that there is a juxta-ampullary diverticulum present.

DR. C. DOYLE HAYNES (Opelika, Alabama): These patients that

have pain in their right upper quadrant certainly are a problem, and I'd like to bring up another diagnostic thing that we tried to do.

We recently had three patients that had right upper quadrant pain, and which we did ERCP's on, and at the time of the ERCP obtained bile, and would spin the bile down and look for crystals in the bile. In three patients that we took the gallbladder out, they had abnormal pathology. I would like to ask Dr. Griffen if he has been spinning the bile down and looking for crystals.

DR. WILLIAM T. FITTS, JR. (Philadelphia, Pennsylvania): I don't believe I heard biliary drainage until the last discussant.

In Philadelphia, we have had two groups of gastroenterologists who believe very firmly that biliary drainage with careful examination of the sediment is more specific and sensitive than oral cholecystograms. I think it's not done more because it takes an awful long time in examining the bile that is gotten in a lot of patients. On the other hand, I think good technicians can use this for screening, and to be checked by the gastroenterologist. And in this day of cost-effectiveness, I would like to ask Dr. Griffen if he would tell us just how much the cholecystokinin costs, and I will try to find out how much the biliary drainage now costs in our hospital, because I'm going to try to get our radiologists to use this, and hope that they can have it done at a lesser cost.

DR. EDWIN L. ROGERS (Closing discussion): In reference to Dr. Custer's comments, it is very important that you obtain informed consent with these patients, and have a close personal working relationship with them.

To Dr. Lindsey, ERCP was not performed in any of our patients, due to our relative lack of success with this procedure. There were no duodenal diverticula present in the upper G.I. series.

To Dr. Haynes, duodenal bile analysis has not been performed on any of these patients, but can be performed as an adjunct, using cholecystokinin injection to facilitate collection.

To Dr. Fitts, the cost of the cholecystokinin cholecystogram was zero in our patients, because the radiologists did not have a separate code for that until we started this study.

In conclusion, the cholecystokinin cholecystogram can be useful in identifying biliary tract disease in persistently symptomatic patients with normal oral cholecystograms, after other sources of epigastric distress have been investigated. Cholecystokinin cholangiograms were obtained, and, when positive, resulted in total alleviation of symptoms of 81% of our patients, with no improvement in only one of 16 patients. The determination of a positive test requires the objective evidence of ineffective gallbladder contraction or spasm and the close questioning of the patient regarding the reproduction of the presenting symptoms after cholecystokinin injection.