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**Observations Following Distension of the Gallbladder and Common Duct in Man.**

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The susceptibility of the gallbladder and common duct to overdistension from various causes makes them a common source of visceral and referred pain. The location of pain in gallbladder disorders varies and there is nothing in its character to differentiate it from pain resulting from a change in the state of the common duct. Patients with biliary disease commonly complain of chronic indigestion and, in addition, their pain may be referred to the interscapular and infrascapular regions, right upper quadrant, epigastrium and occasionally to the left side. Various theories have been proposed to explain the mechanism of this "referred" visceral pain.<sup>1, 2</sup>

Our observations were made on six women operated upon for gallbladder disease. Their complaints varied from chronic indigestion to typical, as well as bizarre, radiation of the pain. Chronic cholecystitis and cholelithiasis were found in every case at operation.

*Method.* In 4 patients the gallbladder was exposed and the stones removed after a short gas-oxygen anesthesia. A sterile rubber balloon, carried on a sterile hollow metal rod, was inserted into the gallbladder. The rod was connected to a blood pressure apparatus through which the balloon could be inflated and the amount of pressure recorded. The fundus of the gallbladder was then sealed around the rod by several sutures and the organ replaced in the abdomen. The edges of the wound were held in approximation and all gauze and retractors removed from its margins to avoid additional painful stimuli. The distension was carried out after the patient had recovered sufficiently from the short anesthesia to answer questions intelligently. In one patient the observations were made following exposure of the gallbladder under local infiltration anesthesia of the right upper quadrant. In a second patient the epigastrium was infiltrated with novocaine after distension of the gallbladder following gas-oxygen anesthesia. The common duct

<sup>1</sup> Mackenzie, J., *Symptoms and Their Interpretation*. London, 4th edition, 1920.

<sup>2</sup> Morley, John, *Abdominal Pain*. William Wood and Co., New York, 1931.

was distended in 2 of the 6 patients by the same method and the resultant signs and symptoms similarly recorded.

Our observations seem to indicate that: 1. Distension of the *gall-bladder* gives rise to deep epigastric discomfort more severe but similar to the attacks of indigestion in gallbladder disease. 2. The discomfort is not referred to the gallbladder region. 3. Distension of the gallbladder does not cause nausea and vomiting. 4. Distension of the *common duct* is much more painful than distension of the gallbladder and in addition is accompanied by nausea and vomiting. 5. Objectively and subjectively the patients have respiratory difficulty when the gallbladder or common duct is distended, especially inspiratory difficulty. 6. It was found impossible to reproduce the usual referred pain in the back, infrascapular region or the right upper quadrant. 7. The pain was not altered in one case in which the right upper quadrant was novocainized. 8. Distension of the gallbladder, producing contact with the parietal peritoneum, gave localized pain. This was markedly relieved by infiltration of the overlying abdominal wall with novocaine.

Since referred pain could not be produced by mechanical distension, weight is given to the argument that referred somatic pain and tenderness are more likely to result from an inflammatory lesion caused by a "peritoneocutaneous" reflex instead of a "viscerocutaneous" reflex. It is indicated that surgically it might be well to explore the common duct in those cases in which vomiting has been a prominent symptom, regardless of the history of jaundice or size of the common duct.

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### Pathogenesis of Trichinous Myocarditis.

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Several authors have recognized and described the histopathology of the parenchymatous lesions and accompanying myocarditis which are seen in the hearts of human cases of trichinosis dying in the fourth to eighth week of the disease. The importance of these lesions in the production of the circulatory failure, which is the cause of death in these cases, has been emphasized.<sup>1</sup> All who have

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<sup>1</sup> Weller, C. V., and Shaw, M., *Trans. Assn. Am. Physicians*, 1932, **47**, 41.