Subphrenic Abscess

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The term 'Subphrenic' has been employed since the description of these spaces by Dr. Barnard before the Surgical Section of the Royal Society of Medicine in 1907. He defined subphrenic abscess as 'a localized collection of pus which is in contact with the under - surface of the diaphragm'. He included the space between the diaphragm above and the transverse colon and its mesocolon below as the 'Subphrenic Space'. There are three spaces above the liver and three below. There are three on the right and three on the left. The suprahepatic space is devided into right and left by the falciform ligament. To the left of this ligament is a space called left subphrenic space. On the right side, the space in front of upper layer of coronary ligament is right anterior subphrenic space, the space behind the lower layer of coronary ligament is the right posterior subphrenic space. The subhepatic space is devided into right and left by the round ligament and the ligament of ductus venosus. To the right of these structures is a space called the right subhepatic space. On the left side, the space in front of stomach and lesser omentum is the left anterior subhepatic space, the space behind the stomach and lesser omentum is the left posterior subhepatic space.

However, the above defined subphrenic spaces were challenged by Dr. Boyd in 1958. In the Surgical Clinic of North America, 1958. He pointed out the fact that the coronary ligament suspends the liver not from above, but from the dorsum, therefore above the liver there are only two subphrenic spaces separated by the falciform ligament. The space termed the 'right posterior subphrenic space' is actually the right posterior subhepatic region and communicates with and is an extension of Morison's pouch. The left side is not so complex as the right side. The liver is small and its triangular ligament extends only a short distance laterally. There are no superior and inferior spaces without communication. It seems questionable whether or not we can truly distinquish between the subphrenic abscess and subhepatic abscess on the left side if the collection is of any size. One can only speak of only one type of left subphrenic infection which in most cases involves both the superior and inf erior surface of the left lobe of the liver, therefore it is suggested that when the infection is present, it is either subphrenic or within the lesser sac when the infection is on the left side.

Regardless of the controversial classification of the subphrenic space including

either four spaces or six spaces, the accumulations and loculations may compartmentalize any area, pouch or space. The most frequent and earlist space involved in infection and abscess formation is the right posterior subhepatic area. The reason for this is that the most common causes of the peritoneal contamination are on the right side such as acute appendicitis, acute cholecystitis or perforated petic ulcer. The inflammatory exudate travels upward from the right iliac fossa, and along the paracolic gutter either by lymphatics or by gravity or by hydrostatic pressure. A review of 125 cases from 1944 to 1964 at Los Angeles Country General Hospital showed 71% of cases were right sided, 23.2% were left sided and 5.8% were bilateral. The review also indicated that the subphrenic abscess devoloped as a complication of abdominal disease in all but 1.6% of cases in which a primary or embolic infection was present. Gastrointestinal perforations and surgery on stomach and duodenum were the most common causal factors, making up 32.8% of the cases, while the liver and biliary tract disease was responsible for 20% of the cases. Trauma was the cause in 18% of cases, appendicitis in 12% and a miscellanous group made up 15%. The recently increasing frequency of subphrenic abscess on the left side, particularly those involving the lesser sac may be the result of the higher incidence of pancreatitis and the more frequent operations on pancreas and spleen.

How the antibiotics have changed the picture of subphrenic abscess? Many believe that the incidence of subphrenic infection has not decreased, but that many instances of infection previously operated upon now resolve with the antibiotic therapy. Others, on the contrary hold that although the antibiotic agents have reduced the need for operation, the diagnosis has been made more obscure and surgical treatment has been delayed. In some instances, the delay has resulted in complication such as perforation of diaphragm with diastrous consequences. Before the advent of the antibiotics, earlier investigators have reported that subphrenic abscess had only a single infecting organism, however, the report from Los Angeles County General Hospital has found an interesting change since the advent of the antibiotics in that more than one organism is present in most instances. E. Coli, Strep and Staph are still the most common infecting organisms. There also has been a rise in G(-)bacteria, such as Klebsiella, Aerobactor, Pseudomonas and Proteus Which accounted for 25.8%, 24.7%, 24.7% and 15.7% respectively of the cases.

The diagosis and localization of subphrenic abscess are of great importance. The diagnostic problem will be simplified if one considers subphrenic abscess as a thoracoabdominal clinical complex. The occurrence of pleuristy with or without effusion, basal pneumonitis, compression atelectasis, decreased or absent excursion of the chest wall or diaphragm on the affected side should make one think of the infection below the diaphragm. By the same token, upper abdominal or frank pain posteriorly, tenderness and rarely finding of a mass in this region may also point to the subphrenic infection.

The only pathognomonic roentgenographic finding in subphrenic abscess is an air-

fluid level below the diaphragm providing one can be certain that it is outside the gastro-intestinal tract. A recent useful adjunct for the localization of subphrenic abscess is the combined lung-liver scan which may show the defect between the liver and lung.

As far as the treatment is concerned, the surgeons must appreciate that he is increasing his responsibility to detect the lesion which may be masked by the antibiotics when he elects the antibiotics to treat a fever of unknown origin. The adquate surgical drainage should consist of the early and proper evacuation of pus in such a way that neither pleural nor peritoneal cavity is contaminated.

The further detail in surgical approach and the experience of subphrenic abscess at our own medical center will be discussed by Dr. Vanderpool.