TUBERCULOUS PERITONITIS SHOULD ALWAYS BE CONSIDERED AS A DIFFERENTIAL DIAGNOSIS IN ABDOMINAL CARCINOMATOSIS

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Over the past half-century, a growing belief among people and their physicians was that tuberculosis (TB) would be well controlled by significantly effective drug development and improved general public health. This attractive and plausible view led physicians to overlook the possibility of tuberculous peritonitis from the differential diagnosis during clinical diagnosis of abdominal carcinomatosis, including in women with ovarian cancer. Overlooking this possibility reportedly resulted in eventual exploratory laparotomy because of the clinical findings and inexperience. Although many cases can be easily found in a literature search, I believe that the actual number of tuberculous peritonitis patients undergoing exploratory laparotomy is unknown, and that the number of reported cases may only represent the tip of the iceberg. Many of these cases have not been presented or published.

TB has started to resurge worldwide in the last 10 years, due to the HIV epidemic and to primary resistance to first-line drugs [1]. Not surprisingly, there has also been an increase in the percentage of patients with atypical presentations and atypical extrapulmonary forms of TB. Extrapulmonary organ involvement is estimated in 10–15% of patients, and abdominal TB is one of the most prevalent forms of extrapulmonary disease [1]. The recent report by Huang et al on clinical presentation of pelvic TB imitating ovarian malignancy summarizes nearly 10 years’ experience in a medical center in Taiwan [2], and points out that many front-line physicians are relatively unfamiliar with this ancient disease [3]. In my hospital, a few cases of tuberculous peritonitis were first thought to be primary ovarian cancer with carcinomatosis before eventually being diagnosed correctly, suggesting that tuberculous peritonitis was included in the differential diagnosis for women with suspected ovarian cancer and widespread abdominal carcinomatosis [4]. Huang et al also accepted that pelvic TB should be taken into account, especially in premenopausal women who manifest with massive ascites, elevated serum CA-125 levels, and adnexal tumors [2]. Wang et al suggested exploratory laparotomy to diagnose pelvic TB, but pelvic TB is a medically treated disease and, in cases of clinically uncertain ascites, the least invasive procedure possible should be used, except in a life-threatening situation [5]. I and my colleagues have tried our best over the long term to deal with patients with a possible diagnosis of tuberculous peritonitis who also present with the above-mentioned symptoms and signs. We have not performed unnecessary exploratory laparotomy for more than 6 years. The last case of tuberculous peritonitis diagnosed by exploratory laparotomy in our hospital occurred about 6 years ago [4].

It is sometimes very difficult to clearly diagnose tuberculous peritonitis before surgery, suggesting that diagnosis is often delayed until after exploratory laparotomy in malignant clinical presentation [2,3]. In fact, Chow et al extensively reviewed the current histologic literature, comprising 1,070 cases of tuberculous peritonitis, and concluded that an aggressive diagnostic approach, particularly with peritoneal biopsy, is warranted for the diagnosis and timely treatment of tuberculous peritonitis [6]. However, there are different kinds of approach that could help to overcome this clinical dilemma. Some of them are very effective, and I would like to introduce alternative ways to diagnose tuberculous peritonitis.

First, a laboratory approach includes looking out for biochemical parameters such as elevated erythrocyte sedimentation rates and normochromic normocytic anemia, a positive tuberculin test, and cell count analysis from ascites revealing lymphocyte predominance, a low serum ascites albumin gradient (< 1.1 g/dL), and increased adenosine deaminase (an enzyme involved in the proliferation and differentiation of lymphocytes, expected to increase during the cellular immune response...
to mycobacterial antigens [7]). Unfortunately, none of these methods are sufficiently sensitive. Specificity is even lower. In addition, microbiologic confirmation from ascitic fluid gives low diagnostic yield [8], suggesting that paracentesis for diagnosis of tuberculous peritonitis would not be very useful.

Second, imaging studies include ultrasound with or without color Doppler ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI). We have found color Doppler ultrasound to be a powerful tool in detecting tuberculous peritonitis by means of characteristics such as caseous, necrotic changes, small size, and miliary scattered spread [4]. In our experience, ultrasonography shows a nearly normal-sized tuberculous ovarian mass, multiple thin incomplete septa, and mesentery nodularity. The feeding vessels of the abdominal tuberculous implants are absent or present at high impedance (resistance index > 0.8) [3]. Observation of fine delicate septa might exclude the possibility of peritoneal carcinomatosis (thick bands). Such findings are further confirmed by CT examination [9], which demonstrates parietal peritoneum enhancement and lymphadenopathy, characteristic omental adhesion, caseous nodules, and tethering of bowel loops. However, such findings failed to prospectively diagnose tuberculous peritonitis in one study [10]. So far, there is a lack of evidence showing that MRI is superior to CT in the diagnosis of tuberculous peritonitis, suggesting that neither convenient but relatively economical transvaginal ultrasound nor expensive CT and/or MRI is sufficient for the diagnosis of tuberculous peritonitis.

Finally, invasive procedures including peritoneal biopsy, surgical approach either from laparoscopy or exploratory laparotomy is the last and most effective tool for a definite diagnosis of tuberculous peritonitis. Blind percutaneous peritoneal biopsy was first advocated as the procedure of choice in cases of early tuberculous peritonitis four decades ago [11], with varying reported rates of success [6]. Biopsy of the peritoneum is performed at the left lower quadrant of the abdomen adjacent to the rectus muscle using an Abrams needle or Cope needle under local anesthesia. The limitations include complications such as bowel perforation and even mortality and contraindication in the absence of ascites. However, these limitations can be overcome using ultrasound or CT guidance for needle biopsy, which is worthy of further investigation [12]. With significant improvement in laparoscopic techniques, laparoscopy is a good diagnostic tool to confirm uncertain abdominal conditions [13], an alternative to traditional laparotomy [14], and a better choice than exploratory laparotomy [15]. Characteristic laparoscopic appearance includes free ascites with multiple yellowish-white nodules of tubercles on the visceral and parietal peritoneum, peritoneal or visceral adhesions, and occasionally, inflamed hemorrhagic areas on the peritoneum [6]. According to large series studying laparoscopic evaluation (combined with peritoneal biopsy) of ascites of unknown origin, a definite diagnosis was established in 80–97% of cases [6,16–18]. One of the great advantages is the timing of diagnosing tuberculous peritonitis in this way. Instead of relying on conventional microbiologic studies, which take up to 4–6 weeks [6], visual diagnosis during laparoscopy followed by histopathologic verification (an exclusion of malignancy) gives a quick diagnosis. Laparoscopic investigation of tuberculous peritonitis is not without risk. Intestinal perforation and other visceral organ injury are potential major complications during laparoscopy [19]. Of most importance, more serious complications such as tumor spread and port-site metastases are possible [20]. Although we should be concerned about these potential risks, in cases of clinically uncertain ascites, the least invasive procedure possible should be used, except in a life-threatening situation. Exploratory laparotomy is the final and presumably safest route for diagnosis and peritoneal biopsy, although there is currently no randomized controlled trial comparing laparoscopy and laparotomy. It is impossible to answer this surgical problem without a properly run trial, so the best course of management remains speculative and controversial [6,21,22].

In conclusion, I would like to use the suggestion from Chow et al as my final opinion for a diagnosis of tuberculous peritonitis [6], that is, a surgeon with extensive experience in laparoscopy may feel competent to attempt laparoscopy; surgical exploration is reserved for uncertainty and complications as reported in most papers [23,24].

References

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