(PVA) is the gold standard for microscopic examination; however, due to the presence of mercuric chloride, modifications that do not employ mercury have been developed. None of these modified preservatives allow stains to provide the same level of microscopic detail, although with experience, they are acceptable alternatives.

In routine procedures, pathogenic *E. histolytica* cannot be differentiated from nonpathogenic *E. dispar* using morphologic criteria, so the laboratory report may indicate *E. histolytica/dispar* [294]. Only an immunoassay or NAAT can differentiate these organisms.

Traditional microscopy-based examination of fecal specimens continues to be the predominant method employed for detection of fecal parasites. Concentration of stool specimens, slide preparation most commonly employing trichrome staining, and microscopic examination is a predominantly manual method requiring significant technologist time and expertise. Recently, slide scanners have been developed to digitize the images and systems employing artificial intelligence (AI) have been developed for fecal trichrome slide interpretation. Although early studies have shown increased sensitivity and increased throughput [295], a requirement for confirmation of images by technologists remains [296].

Viruses

Viral causes of gastroenteritis are often of short duration and self-limited. Viral shedding may persist after resolution of symptoms. Although included as part of some multiplex NAAT, testing is not routinely recommended except in immunocompromised patients, infection control purposes, or outbreak investigations.

Proctitis

Proctitis is most commonly due to sexually transmitted agents, a result of anal-genital contact, although abscesses or perirectal wound infections may present with similar symptoms [297]. Since the beginning of 2022, monkeypox virus, causing the disease now known as mpox, has been detected in nonendemic parts of the world and recognized as a cause of proctitis [298]. One sample is usually sufficient for diagnosis (Table 35).

X. INTRAABDOMINAL INFECTIONS

This section is designed to optimize the activities of the microbiology laboratory to achieve the best approach for the identification of microorganisms associated with peritonitis and intra-peritoneal abscesses, hepatic and splenic abscesses, pancreatitis, and biliary tract infection. As molecular analyses begin to be used to define the microbiome of the gastrointestinal and genitourinary tract, contemporary culture protocols will surely evolve to accommodate new, emerging information. The future use of gene amplification and sequencing for identification of microorganisms in these infections will most likely show that for every organism currently identified by culture there will be several times that number that cannot be cultivated using current technologies. To remain focused on contemporary methods currently available in the diagnostic microbiology laboratory, the tables outline the most likely agents of each entity (Table 36) and how best to evaluate the situation with existing techniques (Table 37).

Factors to consider when collecting specimens for laboratory diagnosis of intraabdominal infections:

Key points for the laboratory diagnosis of intraabdominal infections:

- Most importantly, the laboratory needs the specimen--not a swab of the specimen.
- Sufficient quantity of specimen must be collected to allow the microbiology laboratory to perform all the necessary tests.
- The specimen of choice for an abscess is a sample of the contents plus a sample of the wall of the abscess. Depending on clinical suspicion, these 2 samples may be submitted in a single vial or submitted as 2 separate specimens.
- Pus alone may not reveal the etiologic agent on Gram or other direct smears because the PMNs may have destroyed morphological evidence of microbial invasion.
- Although most molecular tests have excellent sensitivity, a *Mycobacterium tuberculosis* NAAT test should be an adjunct to a culture and never ordered alone. No current commercial methods are FDA-cleared for these specimens, so laboratories must have validated the test they use.
- If *M. tuberculosis* is present, it is usually a sign of disseminated disease that must be thoroughly investigated.

Spontaneous Bacterial Peritonitis and Ascites

In cases of spontaneous bacterial peritonitis (SBP), the source of the invading organism(s) is unknown and the syndrome can also be seen in patients with pre-existing risk factors such as cirrhosis with ascites [299, 300]. SBP is an ascitic fluid infection without an evident intraabdominal focus. It tends to be monomicrobic and caused by aerobic organisms from the intestinal tract, therefore anaerobic cultures are less valuable. Sufficient fluid (eg, at least 10 mL and up to 50 mL, if available) should be obtained to allow for concentration by centrifugation and a cytospin Gram stain evaluation. At a minimum, at least 10 mL of peritoneal fluid (not swabs of the fluid) should be collected aseptically and transported to the laboratory prior to the administration of antimicrobial agents. Additional laboratory testing should include fluid analysis for protein, cell count and differential, lactate concentration, and pH along with 2–3