Discordant Pathological and Endoscopic Diagnosis: Consider Floaters

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ABSTRACT

A tissue floater or extraneous cross-contamination tissue on a microscopic slide is rare; however, it is a potential cause of diagnostic error. Occasionally, on collecting and processing of specimens, cross-contamination of tissue occurs leading to pathologic findings that are inconsistent with endoscopic findings. If the extraneous tissue is neoplastic, it can lead to a false-positive diagnosis. We present a case of discordant pathological and endoscopic diagnosis of invasive squamous carcinoma of the esophagus.

INTRODUCTION

Floaters can lead to unnecessary additional procedures and create a significant amount of emotional distress for patients. Retrospective and prospective case reviews have shown that floaters occur in 0.01%–1.2% of histologic slides and represent a potential source of diagnostic error.¹,² When the tissue is from an entirely different organ, it is easy to deem the abnormal histological finding as a tissue floater. Interestingly, it can be challenging to identify a floater when it is from the same anatomical location and often requires additional steps, including deoxyribonucleic acid analysis, to be taken to prove it is a contaminant. Certain variables, including the location of the tissue, size of suspected contaminant, tissue type of contaminant, and host specimen, need to be examined to determine whether a floater is indeed present.²

CASE REPORT

A 75-year-old man underwent evaluation of chronic reflux at an outside facility. He was from India and denied any history of smoking, alcohol, or drug use. He also denied any family history of cancers. Endoscopic examination was normal except for a nodularity found in the distal esophagus. Cold forceps biopsies obtained revealed invasive squamous carcinoma. Interestingly, positron emission tomography—computed tomography did not show any local disease or any metastasis. He was subsequently referred to our institution for preoperative endoscopic ultrasound staging and consideration of diagnostic endoscopic mucosal resection (EMR).

Esophagogastroduodenoscopy (EGD) with advance imaging using blue light imaging and high-definition white light with Lugol’s solution revealed no mucosal abnormality other than 2 small flat scars presumed to be the sites of previous biopsies (Figure 1). Diagnostic radial endoscopic ultrasound was unremarkable with no abnormal thickening identified in the wall of the esophagus. There were also no enlarged abnormal lymph nodes. Given the lack of endoscopic findings on EGD, we performed Lugol’s chromoendoscopy anticipating to find areas of dysplasia. Application of Lugol’s solution should result in normal mucosa being intensely stained, whereas areas of dysplasia have reduced or absent iodine staining.³,⁴ There was no obvious region in which the iodine was reduced or absent to
suggest dysplasia (Figure 2). To confirm the absence of any neoplastic tissue, we opted to perform EMR on the normal-appearing mucosa at the suspected previous biopsy sites. EMR was then performed at the biopsy scar sites. The pathology results from EMR demonstrated normal esophageal mucosa. The original biopsies from an outside facility were obtained and reviewed by our institution’s gastrointestinal pathologist. Invasive squamous carcinoma was confirmed; however, the cancerous tissue on the slide was completely detached from the normal esophageal mucosa (Figure 3). Given the normal EGD findings and benign EMR pathology, the initial pathology report was amended. The initial carcinoma specimens were rendered as cross-contamination tissue, or floaters and patient was deemed cancer-free.

**DISCUSSION**

Misidentification of tissues can occur by mislabeling specimens, block identification problems, and tissue contaminants.

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**Figure 1.** Blue light imaging no gross nodular abnormality seen.

**Figure 2.** High-definition white light with Lugol’s solution.

**Figure 3.** Endoscopic mucosal resection specimen showing normal esophageal and esophagogastric junction mucosa.

**Figure 4.** Normal esophagus including gastroesophageal junction seen along with the detached squamous cell cancer which was interpreted to be a floater.

Each institution’s pathology laboratory maintains protocols to avoid cross-contamination tissue. Identification processes at laboratories are implemented to avoid and reduce cross-contamination errors. Floaters and contaminants may occur at any step in the process but more frequently occur while cutting the slides from the water bath and linear staining baths. Studies have shown that the most efficient method for reducing tissue floats involves rigorous cleaning of the water baths.² Tissue is deparaffinized during the initial steps for hematoxylin and eosin stain, and the tissue may fragment into dis cohesive pieces. Studies have shown friable native tissues are more likely to have dis cohesion and lead to tissue floats.³ Those tissue fragments that are concerning for floaters will
likely occur along the edge of a slide or may be close to the actual patient specimen but not in direct contact. This is seen on our patient’s slide in which the floater is not in direct contact with the patient’s specimen (Figure 4). Regardless of which step the contamination occurred in our patient’s histologic specimen, meticulous attention to laboratory details for handling tissue specimens is imperative to avoid contamination.

As with everything else in medicine, mistakes and errors do occur. In addition to the institution’s laboratories having elaborate protocols in place for specimen processing to limit specimen contaminants, it is also imperative that endoscopists ensure taking all precautions to avoid cross-contamination of specimens. Finally, we must be diligent in investigating further whether there is discordance between the endoscopic diagnosis and the pathologic diagnosis.

DISCLOSURES

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