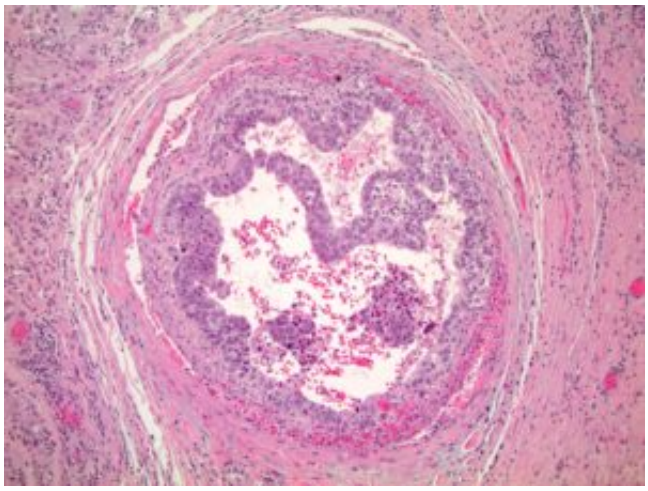
Improving testicle cancer staging: understanding pitfalls in the diagnosis of tumor within the body's interstate highway

Testicular cancer most commonly occurs in young men. Most testicle cancer is a type called testicular germ cell tumors. Testicular germ cell tumors can be further subclassified into tumor subtypes including seminoma and other subtypes grouped into a category called mixed germ cell tumors (embryonal carcinoma, yolk sac tumor, teratoma, and choriocarcinoma). About 30% of testicular germ cell tumors are made of a mixture of these tumor subtypes.



Lymphovascular invasion in a testicular germ cell tumor (embryonal carcinoma is within a lymphatic space)

The extent and potential aggressiveness of testicular germ cell tumors is estimated using a tumor staging system which includes a variety of parameters. Higher stage tumors are thought to be more aggressive and dangerous to the patient and thus more therapy after surgery removal of the tumor may need to be done. For example, even if the testicle is removed, patients with high stage tumors may be recommended to receive additional surgery, chemotherapy, or radiation.

One of the parameters that impact the stage of testicular germ cell tumors is the presence of tumor in the small vessels that connect to lymph nodes, called lymphatics. Lymphatics are the interstate highway through the body which can spread the tumor. Tumor within this "highway" is called lymphovascular invasion. If the doctor diagnosing the tissue, the pathologist, sees tumor in these channels they give the tumor a higher tumor stage. This can trigger additional treatment for the patient.

Because of the impact on patient management, it is important that the diagnosis of lymphovascular

invasion be correct. In this study, we evaluated which features of impacted the reporting of lymphovascular invasion in testicular germ cell tumors. We reviewed 148 testicular germ cell tumors from The Ohio State University Medical Center that were diagnosed from 2007 to 2013.

We found that the type of employee who processed the tissue prior to being examined by the pathologist impacted how often the pathologist found lymphovascular invasion. Seminomas processed by residents (physicians that are in subspecialty training) had a more lymphovascular invasion reported by the pathologist than seminomas processed by pathology assistants (master's degree employees). Tissue can be artifactually smeared into lymphatic channels. We found this smearing artifact to be more common in seminomas compared to mixed germ cell tumors (60% vs 38%). Pathologists do not always agree with each other on whether or not lymphovascular invasion is present. On review, all cases with disagreements in opinion had smearing artifact present. Certain features were found to predict agreement in opinion including tumor in the lymphatics that was cohesive, had smooth contours, and stuck to the vessel wall.

In conclusion, we hope that improved awareness of these findings help pathologists more accurately diagnose lymphovascular invasion.

Debra L. Zynger
Associate Professor
Director of Urologic Pathology
The Ohio State University Medical Center, USA

Publication

Do Histopathologic Variables Affect the Reporting of Lymphovascular Invasion in Testicular Germ Cell Tumors?
French BL, Zynger DL
Am J Clin Pathol. 2016 Mar