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Interobserver variability in differentiated vulvar intraepithelial neoplasia between surgical pathology subspecialties

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Title: Interobserver variability in differentiated vulvar intraepithelial neoplasia between surgical pathology subspecialties

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Abstract:Background: Differentiated vulvar intraepithelial neoplasia (dVIN) is a human papillomavirus-independent lesion with potential for rapid progression to invasive squamous cell carcinoma (SCC). The histologic features of dVIN are diverse and have overlapping characteristics with lichen sclerosis (LS) and lichen simplex chronicus (LSC); and may be diagnosed by dermatopathologists or gynecologic pathologists. The goal of our study is to examine interobserver variability in the diagnosis of dVIN between pathologists with different subspecialty expertise. Design: Biopsies diagnosed as dVIN, LS and LSC from 2011-2018 were retrieved from the pathology database at a large academic institution. Using Fleiss kappa statistic, histologic features and diagnoses are compared between four pathologists (1 surgical, 2 dermatologic, 1 gynecologic). Logistic regression analysis identified features associated with concurrent/subsequent progression to invasive SCC. Results: Interobserver agreement for the diagnosis of LS, LSC and dVIN is moderate, with a kappa value of 0.52, which is similar to the histologic features with higher concordance (Kappa 0.42-0.66). Keratin pearls, basal pleomorphism and basal layer disarray are independent variables for diagnosing dVIN (coefficients 1.88, 1.80 and 1.10 respectively, $p < 0.0001$) and progression to SCC (coefficients 1.88, 0.97 and 1.08 respectively, $p < 0.0001$). Conclusion: No single histologic feature is pathognomonic for dVIN. The presence of keratin pearl, basal pleomorphism and/or basal layer disarray should raise high suspicion for dVIN and concurrent SCC in the same specimen should be ruled out. Expertise in both dermatologic and gynecologic pathology are beneficial to diagnosing dVIN. Consultation with both dermatologic and gynecologic pathology should be encouraged.