Endometrial Biopsy with Non-neoplastic Signet Ring Cells: Potential Pitfall in Diagnosis

Wing Nam Yuen, John LC Chang

Department of Clinical Pathology, Tuen Mun Hospital, Hong Kong

Introduction

Signet ring cells are encountered in a variety of non-neoplastic and neoplastic conditions. Most distressing to pathologists, they are classically seen in poorly -cohesive adenocarcinoma of the stomach and lobular carcinoma of the breast. We hereby describe a case with signet ring cells in a endometrial aspirate specimen and discuss the relevant findings with correlation to previous



studies.

Case Report

A 47-years-old premenopausal female presented with a episode of menorrhagia lasting a total of 7 days. She had no history of malignancy and was not on any medication. Endometrial aspiration was done and sent for pathological examination. The hematoxylin and eosin (H&E) stained slide showed late secretory endometrium featuring tortuous glands in a variably oedematous background with spiral arterioles formation and focal perivascular predecidualisation. Notably, there were areas within the endometrial stroma containing sheets of signet ring cells featuring peripherally-displaced nuclei moulded against a clear cytoplasmatic vacuole. These areas constituted approximately 10% of the endometrial stroma volume and appeared to be blended into the background of late secretory endometrium. Histochemically, they were negative for Alcian blue (performed at pH 2.5), mucicarmine and Periodic acid Schiff (PAS). Immunohistochemically, they were positive for CD10 and Smooth muscle actin (SMA) while negative for pancytokeratin (AE1/AE3 and MNF116)) and CD68 (PGM-1) (Fig 1). The overall features were consistent with late secretory endometrium with presence of signet ring cells that were histochemically and immunohistochemically consistent with decidual cells. Clinical follow up at 10 months revealed improvement of symptoms and a second biopsy was deemed not necessary.

Discussion

The nature of the signet ring cells is thought to be either a morphological pattern of decidual cells or of histiocytic derivation^{1,2}. Our finding shares much similarity with those in Iezzoni et al. and Lim et al. morphologically, histochemically and immunohistochemically. These include areas of signet ring cells blending into a background of late secretory endometrium with the signet ring cells being PAS-, mucicarmine-, CD10+, SMA+ and pancytokeratin-.

Conclusion

Endometrial stromal cells with signet ring cell morphology can be mistaken as metastatic carcinoma. Knowing that signet ring cells can be a rare morphological pattern of decidual cells, appropriate use of immunohistochemistry with positive CD10 staining and more importantly, negative pancytokeratin staining can solve this diagnostic problem.

Reference

¹Iezzoni JC, Mills SE. Nonneoplastic endometrial signet-ring cells. Vacuolated decidual cells and stromal histiocytes mimicking adenocarcinoma. Am J Clin Pathol. 2001 Feb;115 (2):249-55.

²Lim, S., Seo, S., Lim, S.. Signet Ring Cell of the Non-Neoplastic Endometrium: A Case Report and Literature Review. Journal of Clinical Gynecology and Obstetrics, North America, 1, oct. 2012



Fig. 1 (A) Signet ring cells morphology, H&E staining. (B) Areas of signet ring cells blending imperceptivity with the background late secretory endometrium, H&E staining. The signet ring cells are positive for CD10 (C) while negative for AE1/AE3 (D).