Loss of PTEN expression as diagnostic marker of endometrial precancer: a systematic review and meta-analysis.

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ABSTRACT

Background: The differential diagnosis between benign and premalignant endometrial hyperplasia (EH) is based on two different classifications (WHO and EIN) and is often difficult. Thus, ESMO-ESGO-ESTRO consensus conference has recommended the use of immunohistochemistry for PTEN, although its diagnostic accuracy has never been defined.

Objective: To assess the diagnostic accuracy of immunohistochemistry for PTEN in differential diagnosis between benign and premalignant EH.

Search strategy: MEDLINE, EMBASE, Web of Sciences, Scopus, ClinicalTrial.gov, OVID, Cochrane Library and Google Scholar were searched for relevant articles from the inception to November 2017.

Selection criteria: All studies assessing immunohistochemical expression of PTEN on histological specimens of premalignant and/or benign EH were included.

Data collection and analysis: The index test was PTEN status ("loss" or "presence"); the reference test was the histological diagnosis ("precancer" or "benign"). Sensitivity, specificity, positive and negative likelihood ratio (LR+, LR-), diagnostic odds ratio (DOR) and area under the curve (AUC) on SROC curves were calculated (95% CI), with a subgroup analysis based on the classification adopted (WHO *vs* EIN).

Main results: 27 retrospective studies with 1736 EH were included. Pooled estimates showed low diagnostic accuracy: sensitivity 54% (95% CI, 50-59%), specificity 66% (63-69%), LR+ 1.55 (1.29-1.87), LR- 0.72 (0.62-0.83), DOR 3.56 (2.02-6.28), AUC 0.657. When

WHO subgroup was compared to EIN subgroup, higher accuracy (AUC: 0.694 *vs* 0.621), and higher heterogeneity in all analyses, were observed.

Conclusion: Immunohistochemistry for PTEN showed low diagnostic usefulness in differential diagnosis of EH. Thus, its recommended use should be reconsidered.

KEYWORDS

Atypical endometrial hyperplasia; endometrial intraepithelial neoplasia; endometrial hyperplasia without atypia; biomarker; cancer precursor; endometrioid adenocarcinoma.