Clinical performance of a multivariate index assay for detecting early-stage ovarian cancer

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Overview

1,016 prospective patient cases, which included 86 early-stage ovarian cancers, were evaluated with preoperative biomarkers, clinical assessment of ovarian cancer risk, and modified ACOG guidelines. For all early-stage ovarian malignancies, OVA1 combined with clinical assessment had significantly higher sensitivity compared to clinical assessment alone, CA-125, and modified ACOG guidelines. The performance was consistent across menopausal status.

Clinical assessment: *a clinical prediction of malignancy based on physical examination and imaging, per the study inclusion criteria, and CA 125, if used.*

CA-125: *Cancer antigen marker values cutoff in accordance with ACOG referral criteria of 200 U/mL (premenopausal) or 35 U/mL (postmenopausal)*

Modified (Dearking) ACOG guidelines:

Premenopausal women who meet one the following criteria:
CA-125 >67 U/mL, Ascites, or Evidence of abdominal or distant metastasis.

Postmenopausal women who meet one the following criteria:
CA-125 >35 U/mL, Nodular or fixed pelvic mass, Ascites, or Evidence of abdominal or distant metastasis.

Key Results

- OVA1 with clinical assessment had 95% sensitivity to early-stage malignancy, which was statistically superior to clinical assessment alone (69%), CA-125 (63%), and modified ACOG guidelines (77%)
- Adding OVA1 to clinical assessment reduced the percent of early-stage malignancy missed from 31% to 5% and in turn, increased the NPV (confidence a negative result is truly negative)
- There was no case of early-stage malignancy correctly identified by CA-125 or modified ACOG guidelines but missed by OVA1
- Performance across all cancer cases:

	Clinical assessment	OVA1 + clinical assessment
Sensitivity	75%	95%
Specificity	86%	44%
PPV	65%	36%
NPV	91%	97%

Conclusion

This large, prospectively enrolled, multi-institutional study demonstrated that use of OVA1 detected more early-stage malignancy than the current standard of care.

Comparative Sensitivity By Cancer Stage

	Stage I	Stage II	Early Stage	Late stage
OVA1 + clinical assessment	93%	93%	95%	100%
OVA1	89%	100%	92%	99%
Modified ACOG	69%	96%	77%	98%
Clinical assessment	64%	80%	69%	91%
CA-125	57%	76%	63%	95%