

ORIGINAL RESEARCH ARTICLE

Machine learning-enhanced immune signatures optimize cancer antigen 125 performance for epithelial ovarian carcinoma detection

Supplementary File

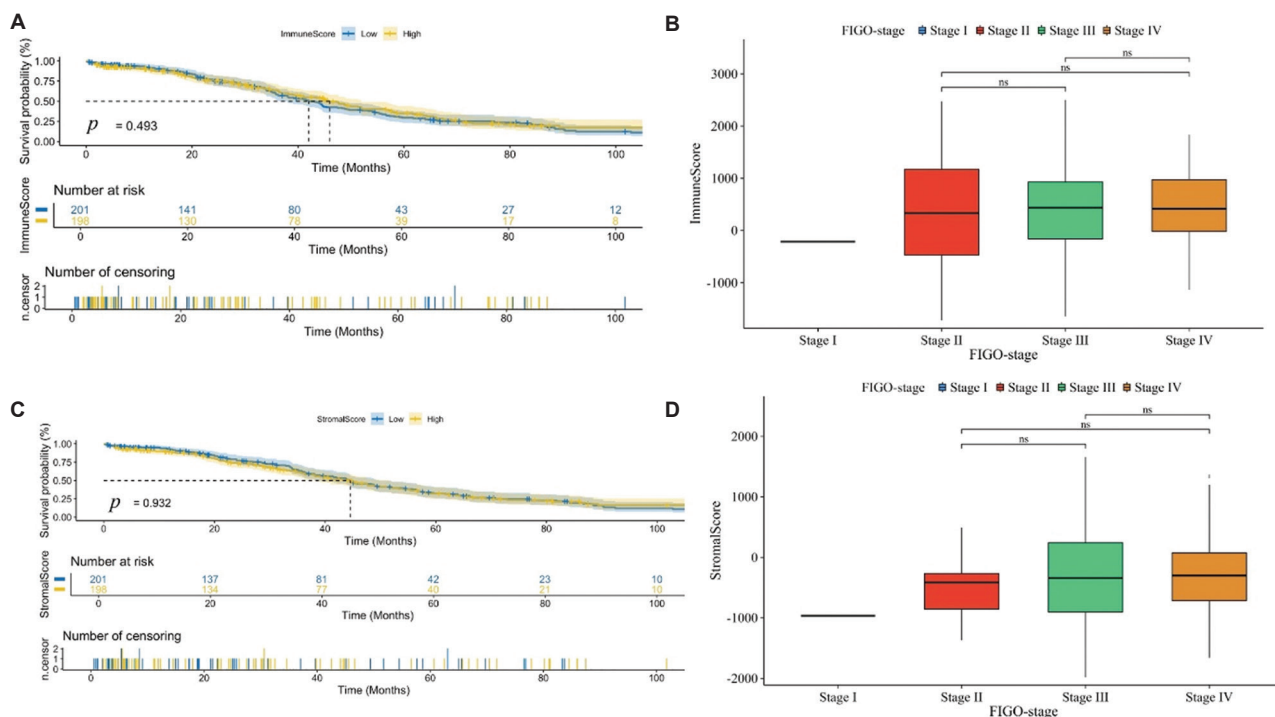


Figure S1. Association of scores with the survival and stage of patients with ovarian cancer tissue. (A) Kaplan–Meier survival analysis for patients with ovarian cancer grouped into ImmuneScore high and low groups, with the average value as the cutoff. (B) Association of the ImmuneScore with clinicopathological staging characteristics. (C) Survival analysis using the Kaplan–Meier method for patients with ovarian cancer grouped by the StromalScore. (D) Association of the StromalScore with clinicopathological staging characteristics. “ns” refers to not significant ($p>0.05$). Abbreviation: FIGO: International Federation of Gynecology and Obstetrics.

Table S1. Comparison of baseline data between patients with malignant and benign ovarian tumors

Characteristics	Malignant group (n=70)	Benign group (n=70)	χ^2/t -value	p-value
Age at first menstruation (years), mean±standard deviation	13.8±1.3	13.4±1.1	1.462	0.14
Non-menopause (%)	26 (37.1)	23 (32.9)		
Menopause (%)	44 (62.9)	47 (67.1)		
Age of menopause (years), mean±standard deviation	49.6±3.8	49.0±3.2	0.748	0.472
Number of pregnancies, n (%)			2.373	0.123
<3	25 (35.7)	34 (46.8)		
≥4	45 (64.3)	36 (51.4)		
Number of births, n (%)			0.771	0.38
<2	42 (60.0)	47 (67.1)		
≥7	28 (40.0)	23 (32.9)		

Table S2. The clinicopathological characteristics of patients with malignant and benign ovarian tumors

Characteristics	Malignant group (n=70)	Benign group (n=70)
Pathological type, n (%)		
Serous carcinoma	54 (77.1)	-
Endometrioid cancer	5 (7.1)	-
Clear cell carcinoma	9 (12.9)	-
Mucinous cancer	2 (2.9)	-
Chocolate cyst	-	36 (51.4)
Mucinous cystadenoma	-	12 (17.1)
Serous cystadenoma	-	11 (15.7)
Other FIGO stage, n (%)	-	11 (15.7)
I	22 (31.4)	-
II	10 (14.3)	-
III	29 (41.4)	-
IV	9 (12.9)	-
Tumor size (cm), n (%)		
<5	10 (14.3)	11 (15.7)
≥5	60 (85.7)	59 (84.3)
Tumor site, n (%)		
Left side	18 (25.7)	27 (38.6)
Right side	34 (48.6)	24 (34.3)
Bilateral	18 (25.7)	19 (27.1)

Abbreviation: FIGO: International Federation of Gynecology and Obstetrics.

Table S3. Comparison of hematological parameters between malignant and benign ovarian tumors

Parameters	Malignant group (n=70)	Benign group (n=70)	z-value	p-value
WBC (×10 ⁹ /L)	6.05 (5.08, 7.43)	5.16 (4.19, 6.32)	-3.872	0.002*
HCT	37.35 (35.18, 39.13)	37.4 (34.05, 40.76)	-2.38	0.489
MCV (fL)	90.75 (87.28, 93.60)	89.6 (86.48, 92.85)	-4.245	0.352
PLT (×10 ⁹ /L)	225.5 (184.75, 272.75)	198.5 (172.75, 242.00)	-1.738	0.033*
NEUT%	67.35 (59.93, 72.23)	59.7 (54.95, 69.50)	-2.359	0.001*
LYMPH%	23.1 (18.00, 29.83)	30.2 (24.02, 35.33)	-1.265	<0.001*
EO%	1.4 (0.90, 2.60)	1.6 (0, 2.35)	-4.076	0.537
BASO%	0.3 (0, 0.50)	0 (0, 0.20)	-1.684	<0.001**
MONO%	6.9 (5.30, 8.30)	5.95 (5.00, 7.25)	-3.072	0.037*
NEUT (×10 ⁹ /L)	4.07 (3.14, 5.01)	3.11 (2.35, 3.87)	-0.692	<0.001**
LYMPH (×10 ⁹ /L)	1.46 (1.16, 1.75)	1.58 (1.18, 1.97)	-0.932	0.095
EO (×10 ⁹ /L)	0.08 (0.05, 0.16)	0.08 (0.04, 0.14)	-2.134	0.801
BASO (×10 ⁹ /L)	0.02 (0, 0.03)	0 (0, 0.01)	-3.367	<0.001**
MONO (×10 ⁹ /L)	0.42 (0.34, 0.52)	0.32 (0.25, 0.42)	-4.007	0.001*
RDW-CV (%)	13.1 (12.50, 13.08)	13 (12.70, 13.83)	-0.617	0.765
RDW-SD (fL)	43.3 (40.60, 44.53)	42.6 (41.10, 45.03)	-5.509	0.807
PDW (fL)	13.90 (12.28, 15.73)	14.90 (13.10, 17.40)	-2.082	0.073
MPV (fL)	11.5 (10.48, 12.23)	11.8 (11.10, 12.80)	-3.893	0.077
PCT (%)	0.26 (0.22, 0.32)	0.24 (0.21, 0.29)	-1.667	0.08
ESR (mm/h)	19.5 (8.75, 37.25)	7.5 (6.00, 13.00)	-0.253	<0.001**
CA125 (U/mL)	332.05 (66.18, 869.25)	33.9 (18.95, 67.28)	-5.731	<0.001**
NLR	2.98 (1.99, 3.95)	1.99 (1.56, 2.82)	-3.361	<0.001**
PLR	162.39 (114.02, 237.62)	129.17 (106.46, 180.83)	-0.298	0.017*
LMR	3.42 (2.60, 4.43)	5.03 (3.72, 6.28)	-0.244	<0.001**
PMR	571.25 (392.11, 790.62)	651.14 (451.63, 915.15)	-1.794	0.082
PNR	55.72 (39.35, 75.79)	65.95 (47.06, 97.49)	-1.766	0.018*
RLR	8.87 (7.71, 11.65)	8.49 (6.62, 12.23)	-1.752	0.206
SII	691.78 (375.56, 1,146.02)	415.92 (286.07, 521.08)	-4.369	<0.001**

Note: Numbers in brackets refer to 95% confidence interval. Statistical significance determined at * $p < 0.05$, ** $p < 0.001$.

Abbreviations: BASO: Basophil; BASO%: Percentage of basophils; CA125: Cancer antigen 125; EO: Eosinophil; EO%: Percentage of eosinophils; ESR: Erythrocyte sedimentation rate; HCT: Hematocrit; LMR: Lymphocyte-to-monocyte ratio; LYMPH: Lymphocyte; LYMPH%: Percentage of lymphocytes; MCV: Mean corpuscular volume; MONO: Monocyte; MONO%: Percentage of monocytes; MPV: Mean platelet volume; NEUT: Neutrophil; NEUT%: Percentage of neutrophils; NLR: Neutrophil-to-lymphocyte ratio; PCT: Plateletcrit; PDW: Platelet distribution width; PLR: Platelet-to-lymphocyte ratio; PLT: Platelet; PMR: Platelet-to-monocyte ratio; PNR: Platelet-to-neutrophil ratio; RDW-CV: Red cell distribution width-coefficient of variation; RDW-SD: Red cell distribution width-standard deviation; RLR: Red blood cell-to-lymphocyte ratio; SII: Systemic immune-inflammation index; WBC: White blood cell.

Table S4. Simple logistic regression analysis for ovarian tumors in malignant and benign groups

Variable	B	Standard error	Wald χ^2 value	p-value	Odds ratio	95% confidence interval
NLR	-1.852	0.666	7.736	0.005	0.157	0.043-0.579
SII	0.027	0.012	5.207	0.022	1.027	1.004-1.051
ESR	0.087	0.042	4.314	0.038	1.091	1.005-1.184
CA125	0.010	0.003	10.668	0.001	1.01	1.004-1.016
Constant	-7.247	21.536	0.113	0.737	0.001	-

Abbreviations: CA125: Cancer antigen 125; ESR: Erythrocyte sedimentation rate; NLR: Neutrophil-to-lymphocyte ratio; SII: Systemic immune-inflammation index.

Table S5. Diagnostic evaluation of ovarian tumors or related hematological parameters in the malignant and benign groups using cancer antigen 125

Variable	AUC	Youden index	95% CI	Cutoff	p-value	Sensitivity	Specificity
CA125	0.852	0.656	0.765–0.939	158.55	<0.001	0.706	0.950
ESR	0.772	0.435	0.670–0.873	16.00	<0.001	0.618	0.817
SII	0.720	0.405	0.602–0.837	648.58	<0.001	0.588	0.817
NLR	0.713	0.409	0.606–0.819	2.45	0.001	0.676	0.733

Abbreviations: AUC: Area under the curve; CA125: Cancer antigen 125; CI: Confidence interval; ESR: Erythrocyte sedimentation rate; NLR: Neutrophil-to-lymphocyte ratio; SII: Systemic immune-inflammation index.

Table S6. Comparison of hematological parameters of ovarian tumors between different ovarian cancer stages and benign groups

Parameters	Early group (n=32)	Advanced group (n=38)	Benign group (n=70)	z-value	p-value
WBC (×10 ⁹ /L)	5.49 (4.80, 6.91)	6.36 (5.36, 7.61)	5.16 (4.19, 6.32)	-1.323	0.186
HCT	37.90 (35.63, 39.48)	36.85 (34.98, 38.23)	37.40 (34.05, 40.76)	-0.004	0.997
MCV (fL)	92.25 (87.65, 94.35)	89.60 (86.85, 93.10)	89.60 (86.48, 92.85)	-1.619	0.105
PLT (×10 ⁹ /L)	219.00 (176.00, 264.75)	252.50 (190.00, 310.25)	198.50 (172.75, 242.00)	-0.894	0.371
NEUT%	64.20 (59.78, 71.20)	68.60 (60.18, 74.08)	59.70 (54.95, 69.50)	-2.099	0.036*
LYMPH%	25.95 (19.88, 31.30)	21.70 (15.93, 29.45)	30.20 (24.02, 35.33)	-2.351	0.019*
EO%	1.30 (0.93, 2.85)	1.55 (0.68, 2.60)	1.60 (0, 2.35)	-0.545	0.586
BASO%	0.35 (0, 0.50)	0.30 (0, 0.50)	0.00 (0, 0.20)	-4.462	<0.001**
MONO%	6.50 (5.68, 7.75)	7.50 (5.28, 8.55)	5.95 (5.00, 7.25)	-1.382	0.167
NEUT (×10 ⁹ /L)	3.62 (3.04, 4.74)	4.41 (3.27, 5.46)	3.11 (2.35, 3.87)	-2.189	0.029*
EO (×10 ⁹ /L)	1.49 (1.26, 1.71)	1.37 (1.07, 1.76)	1.58 (1.18, 1.97)	-1.201	0.23
BASO (×10 ⁹ /L)	0.07 (0.05, 0.14)	0.09 (0.05, 0.18)	0.08 (0.04, 0.14)	-0.098	0.922
MONO (×10 ⁹ /L)	0.02 (0, 0.03)	0.02 (0, 0.03)	0.00 (0, 0.01)	-4.521	<0.001**
RDW-CV (%)	0.38 (0.29, 0.45)	0.47 (0.38, 0.55)	0.32 (0.25, 0.42)	-1.829	0.067
RDW- SD (fL)	12.75 (12.30, 13.80)	13.20 (12.70, 13.90)	13.00 (12.70, 13.83)	-1.227	0.22
PDW (fL)	43.80 (41.58, 44.68)	42.70 (40.50, 44.33)	42.60 (41.10, 45.03)	-0.996	0.319
PDW (fL)	13.85 (12.63, 15.48)	14.15 (12.10, 16.20)	14.90 (13.10, 17.40)	-1.616	0.106
MPV (fL)	11.55 (10.60, 12.28)	11.40 (10.40, 12.23)	11.80 (11.10, 12.80)	-1.007	0.314
PCT (%)	0.24 (0.21, 0.30)	0.27 (0.23, 0.33)	0.24 (0.21, 0.29)	-0.334	0.739
ESR (mm/h)	14.00 (7.50, 27.50)	26.00 (15.00, 44.50)	7.50 (6.00, 13.00)	-2.254	0.024*
CA125 (U/mL)	104.75 (33.35, 480.25)	464.15 (258.43, 1,543.00)	33.90 (18.95, 67.28)	-3.667	<0.001**
NLR	2.46 (1.92, 3.51)	3.32 (2.03, 4.72)	1.99 (1.56, 2.82)	-2.365	0.018*
PLR	153.66 (112.90, 194.17)	171.78 (119.39, 275.51)	129.17 (106.46, 180.83)	-1.19	0.234
LMR	3.62 (3.21, 5.08)	2.99 (2.49, 4.15)	5.03 (3.72, 6.28)	-2.423	0.015*
PMR	552.41 (401.00, 677.38)	576.69 (356.21, 845.88)	651.14 (451.63, 915.15)	-1.587	0.113
PNR	57.41 (40.11, 70.32)	54.14 (37.81, 85.06)	65.95 (47.06, 97.49)	-2.041	0.041*
RLR	8.77 (7.87, 10.39)	9.60 (7.44, 14.31)	8.49 (6.62, 12.23)	-0.732	0.464
SII	530.68 (343.91, 931.78)	818.91 (393.95, 1,377.42)	415.92 (286.07, 521.08)	-2.322	0.020*

Note: Numbers in brackets refer to 95% confidence interval. Statistical significance determined at *p<0.05, ** p<0.001.

Abbreviations: BASO: Basophil; BASO%: Percentage of basophils; EO%: Percentage of eosinophils; CA125: Cancer antigen 125; EO: Eosinophil; ESR: Erythrocyte sedimentation rate; HCT: Hematocrit; LMR: Lymphocyte-to-monocyte ratio; LYMPH: Lymphocyte; LYMPH%: Percentage of lymphocytes; MCV: Mean corpuscular volume; MONO: Monocyte; MONO%: Percentage of monocytes; MPV: Mean platelet volume; NEUT: Neutrophil; NEUT%: Percentage of neutrophils; NLR: Neutrophil-to-lymphocyte ratio; PCT: Plateletcrit; PDW: Platelet distribution width; PLR: Platelet-to-lymphocyte ratio; PLT: Platelet; PMR: Platelet-to-monocyte ratio; PNR: Platelet-to-neutrophil ratio; RDW-CV: Red cell distribution width-coefficient of variation; RDW-SD: Red cell distribution width-standard deviation; RLR: Red blood cell-to-lymphocyte ratio; SII: Systemic immune-inflammation index; WBC: White blood cell.

Table S7. Logistic regression analysis identified independent predictors for early-stage epithelial ovarian cancer

Variable	B	Standard error	Wald χ^2 value	p-value	Odds ratio	95% confidence interval
PNR	-0.168	0.071	5.657	0.017	0.845	0.736-0.971
SII	0.016	0.008	3.883	0.049	1.016	1.000-1.033
CA125	0.009	0.004	5.356	0.021	1.009	1.001-1.017
Constant	12.796	15.777	0.658	0.417	1.615	-

Abbreviations: CA125: Cancer antigen 125; PNR: Platelet-to-neutrophil ratio; SII: Systemic immune-inflammation index.

Table S8. Comparison of hematological parameters in advanced epithelial ovarian cancer and benign ovarian tumor

Parameters	Advanced group (n=38)	Benign group (n=70)	z-value	p-value
WBC ($\times 10^9/L$)	6.36 (5.36, 7.61)	5.16 (4.19, 6.32)	-3.561	<0.001**
HCT	36.85 (34.98, 38.23)	37.40 (34.05, 40.76)	-1.065	0.287
MCV (fL)	89.60 (86.85, 93.10)	89.60 (86.48, 92.85)	-0.006	0.995
PLT ($\times 10^9/L$)	252.50 (190.00, 310.25)	198.50 (172.75, 242.00)	-2.496	0.013*
NEUT%	68.60 (60.18, 74.08)	59.70 (54.95, 69.50)	-3.326	0.001*
LYMPH%	21.70 (15.93, 29.45)	30.20 (24.02, 35.33)	-4.089	<0.001**
EO%	1.55 (0.68, 2.60)	1.60 (0, 2.35)	-0.467	0.641
BASO%	0.30 (0, 0.50)	0.00 (0, 0.20)	-4.795	<0.001**
NONO%	7.50 (5.28, 8.55)	5.95 (5.00, 7.25)	-1.982	0.047*
NEUT ($\times 10^9/L$)	4.41 (3.27, 5.46)	3.11 (2.35, 3.87)	-4.056	<0.001**
LYMPH ($\times 10^9/L$)	1.37 (1.07, 1.76)	1.58 (1.18, 1.97)	-1.502	0.133
EO ($\times 10^9/L$)	0.09 (0.05, 0.18)	0.08 (0.04, 0.14)	-0.303	0.762
BASO ($\times 10^9/L$)	0.02 (0, 0.03)	0.00 (0, 0.01)	-5.093	<0.001**
MONO ($\times 10^9/L$)	0.47 (0.38, 0.55)	0.32 (0.25, 0.42)	-3.556	<0.001**
RDW-CV (%)	13.20 (12.70, 13.90)	13.00 (12.70, 13.83)	-0.634	0.526
RDW-SD (fL)	42.70 (40.50, 44.33)	42.60 (41.10, 45.03)	-0.512	0.609
PDW (fL)	14.15 (12.10, 16.20)	14.90 (13.10, 17.40)	-1.337	0.181
MPV (fL)	11.40 (10.40, 12.23)	11.80 (11.10, 12.80)	-1.838	0.066
PCT (%)	0.27 (0.23, 0.33)	0.24 (0.21, 0.29)	-2.416	0.016*
ESR (mm/h)	26.00 (15.00, 44.50)	7.50 (6.00, 13.00)	-4.569	<0.001**
CA125 (U/mL)	464.15 (258.43, 1,543.00)	33.90 (18.95, 67.28)	-7.057	<0.001**
NLR	3.32 (2.03, 4.72)	1.99 (1.56, 2.82)	-3.866	<0.001**
PLR	171.78 (119.39, 275.51)	129.17 (106.46, 180.83)	-2.612	0.009*
LMR	2.99 (2.49, 4.15)	5.03 (3.72, 6.28)	-4.391	<0.001**
PMR	576.69 (356.21, 845.88)	651.14 (451.63, 915.15)	-1.267	0.205
PNR	54.14 (37.81, 85.06)	65.95 (47.06, 97.49)	-1.821	0.069
RLR	9.60 (7.44, 14.31)	8.49 (6.62, 12.23)	-1.3	0.194
SII	818.91 (393.95, 1377.42)	415.92 (286.07, 521.08)	-4.22	<0.001**

Note: Numbers in brackets refer to 95% confidence interval. Statistical significance determined at * $p < 0.05$, ** $p < 0.001$.

Abbreviations: BASO: Basophil; BASO%: Percentage of basophils; CA125: Cancer antigen 125; EO: Eosinophil; EO%: Percentage of eosinophils; ESR: Erythrocyte sedimentation rate; HCT: Hematocrit; LMR: Lymphocyte-to-monocyte ratio; LYMPH: Lymphocyte; LYMPH%: Percentage of lymphocytes; MCV: Mean corpuscular volume; MONO: Monocyte; MPV: Mean platelet volume; NEUT: Neutrophil; NEUT%: Percentage of neutrophils; NLR: Neutrophil-to-lymphocyte ratio; PCT: Plateletcrit; PDW: Platelet distribution width; PLR: Platelet-to-lymphocyte ratio; PLT: Platelet; PMR: Platelet-to-monocyte ratio; PNR: Platelet-to-neutrophil ratio; RDW-CV: Red cell distribution width-coefficient of variation; RDW-SD: Red cell distribution width-standard deviation; RLR: Red blood cell-to-lymphocyte ratio; SII: Systemic immune-inflammation index; WBC: White blood cell.

Table S9. The logistic regression analysis of independent influencing factors for advanced epithelial ovarian cancer

Variable	B	Standard error	Wald χ^2 value	p-value	Odds ratio	95% confidence interval
NLR	-0.990	0.471	4.423	0.035	0.372	0.148–0.935
SII	0.004	0.002	4.165	0.041	1.004	1.000–1.007
ESR	0.105	0.046	5.314	0.021	1.111	1.016–1.215
CA125	0.008	0.003	7.350	0.007	1.008	1.002–1.014
Constant	-4.761	1.273	13.996	0.000	0.009	

Abbreviations: CA125: Cancer antigen 125; ESR: Erythrocyte sedimentation rate; NLR: Neutrophil-to-lymphocyte ratio; SII: Systemic immune-inflammation index.

Table S10. Experimental evaluation of cancer antigen 125 and hematological parameters in the diagnosis of advanced epithelial ovarian cancer

Variable	AUC	Youden index	95% CI	Cut-off	p-value	Sensitivity	Specificity
NLR	0.768	0.557	0.651–0.884	2.45	0.001	0.824	0.733
SII	0.795	0.539	0.652–0.938	677.51	<0.001	0.706	0.833
ESR	0.864	0.582	0.767–0.960	16.00	<0.001	0.765	0.817
CA125	0.939	0.849	0.871–1.000	191.20	<0.001	0.882	0.967

Abbreviations: AUC: Area under the curve; CA125: Cancer antigen 125; CI: Confidence interval; ESR: Erythrocyte sedimentation rate; NLR: Neutrophil-to-lymphocyte ratio; SII: Systemic immune-inflammation index.

Table S11. Comparison of hematological parameters between epithelial ovarian cancer and the healthy group

Parameters	Malignant group (n=70)	Healthy group (n=60)	z-value	p-value
WBC ($\times 10^9/L$)	6.05 (5.08, 7.43)	4.59 (3.80, 5.82)	-5.011	<0.001**
HCT	37.35 (35.18, 39.13)	37.00 (32.93, 40.43)	-0.082	0.935
MCV (fL)	90.75 (87.28, 93.60)	90.05 (85.23, 92.80)	-1.42	0.156
PLT ($\times 10^9/L$)	225.50 (184.75, 272.75)	205.50 (170.50, 247.50)	-2.249	0.025*
NEUT%	67.35 (59.93, 72.23)	58.35 (53.58, 64.45)	-4.694	<0.001**
LYMPH%	23.10 (18.00, 29.83)	32.75 (27.93, 38.80)	-5.446	<0.001**
EO%	1.40 (0.90, 2.60)	1.20 (0.65, 1.90)	-1.491	0.136
BASO%	0.30 (0, 0.50)	0.20 (0, 0.48)	-1.595	0.111
MONO%	6.90 (5.30, 8.30)	6.05 (5.15, 7.35)	-2.032	0.042*
NEUT ($\times 10^9/L$)	4.07 (3.14, 5.01)	2.96 (2.39, 3.95)	-4.105	<0.001**
LYMPH ($\times 10^9/L$)	1.46 (1.16, 1.75)	1.53 (1.35, 1.82)	-1.833	0.067
EO ($\times 10^9/L$)	0.08 (0.05, 0.16)	0.06 (0.03, 0.10)	-2.618	0.009*
BASO ($\times 10^9/L$)	0.02 (0, 0.03)	0.01 (0, 0.02)	-2.07	0.038*
MONO ($\times 10^9/L$)	0.42 (0.34, 0.52)	0.33 (0.24, 0.43)	-3.062	0.002*
RDW-CV (%)	13.10 (12.50, 13.08)	12.90 (12.40, 13.68)	-0.923	0.356
RDW-SD (fL)	43.30 (40.60, 44.53)	42.10 (40.73, 43.85)	-1.527	0.127
PDW (fL)	13.90 (12.28, 15.73)	14.70 (12.70, 16.15)	-0.972	0.331
MPV (fL)	11.50 (10.48, 12.23)	11.30 (10.43, 12.08)	-0.656	0.512
PCT (%)	0.26 (0.22, 0.32)	0.23 (0.20, 0.26)	-3.224	0.001*
ESR (mm/h)	19.50 (8.75, 37.25)	6.50 (3.00, 9.00)	-6.986	<0.001**
CA125 (U/mL)	332.05 (66.18, 869.25)	15.00 (11.30, 30.45)	-8.073	<0.001**
NLR	2.98 (1.99, 3.95)	1.82 (1.51, 2.48)	-4.416	<0.001**
PLR	162.39 (114.02, 237.62)	129.56 (111.41, 149.45)	-2.931	0.003*

(Cont'd...)

Table S11. (Continued)

Parameters	Malignant group (n=70)	Healthy group (n=60)	z-value	p-value
LMR7	3.42 (2.60, 4.43)	4.72 (3.33, 6.39)	-3.991	<0.001**
PMR	571.25 (392.11, 790.62)	613.56 (420.98, 837.50)	-1.163	0.245
PNR	55.72 (39.35, 75.79)	71.50 (50.21, 85.50)	-2.242	0.025*
RLR	8.87 (7.71, 11.65)	8.30 (7.19, 9.73)	-1.777	0.076
SII	691.78 (375.56, 1,146.02)	374.98 (280.06, 556.80)	-4.24	<0.001**

Note: Numbers in brackets refer to 95% confidence interval. Statistical significance determined at * $p < 0.05$, ** $p < 0.001$.

Abbreviations: BASO: Basophil; BASO%: Percentage of basophils; CA125: Cancer antigen 125; EO: Eosinophil; EO%: Percentage of eosinophils; ESR: Erythrocyte sedimentation rate; HCT: Hematocrit; LMR: Lymphocyte-to-monocyte ratio; LYMPH: Lymphocyte; LYMPH%: Percentage of lymphocytes; MCV: Mean corpuscular volume; MONO: Monocyte; MONO%: Percentage of monocytes; MPV: Mean platelet volume; NEUT: Neutrophil; NEUT%: Percentage of neutrophils; NLR: Neutrophil-to-lymphocyte ratio; PCT: Plateletcrit; PDW: Platelet distribution width; PLR: Platelet-to-lymphocyte ratio; PLT: Platelet; PMR: Platelet-to-monocyte ratio; PNR: Platelet-to-neutrophil ratio; RDW-CV: Red cell distribution width-coefficient of variation; RDW-SD: Red cell distribution width-standard deviation; RLR: Red blood cell-to-lymphocyte ratio; SII: Systemic immune-inflammation index; WBC: White blood cell.

Table S12. Logistic regression analysis identified independent predictors for the onset of epithelial ovarian cancer in healthy individuals

Variable	B	Standard error	Wald χ^2 value	p-value	Odds ratio	95% confidence interval
CA125	0.016	0.006	5.765	0.002	1.017	1.005-1.028
ESR	0.173	0.061	7.974	0.005	1.189	1.054-1.340
WBC	0.993	0.414	5.765	0.016	2.700	1.200-6.074
Constant	- 1.517	8.057	0.035	0.851	0.219	-

Abbreviations: CA125: Cancer antigen 125; ESR: Erythrocyte sedimentation rate; WBC: White blood count.

Table S13. Screening evaluation of cancer antigen 125 and hematological parameters in epithelial ovarian cancer and healthy groups

Variable	AUC	Youden index	95% CI	Cut-off	p-value	Sensitivity	Specificity
CA125	0.912	0.667	0.863-0.969	130.25	<0.001	0.700	0.967
ESR	0.856	0.403	0.793-0.918	12.50	<0.001	0.671	0.900
WBC	0.755	0.571	0.673-0.838	5.335	<0.001	0.686	0.717

Abbreviations: AUC: Area under the curve; CA125: Cancer antigen 125; CI: Confidence interval; ESR: Erythrocyte sedimentation rate; WBC: White blood count.

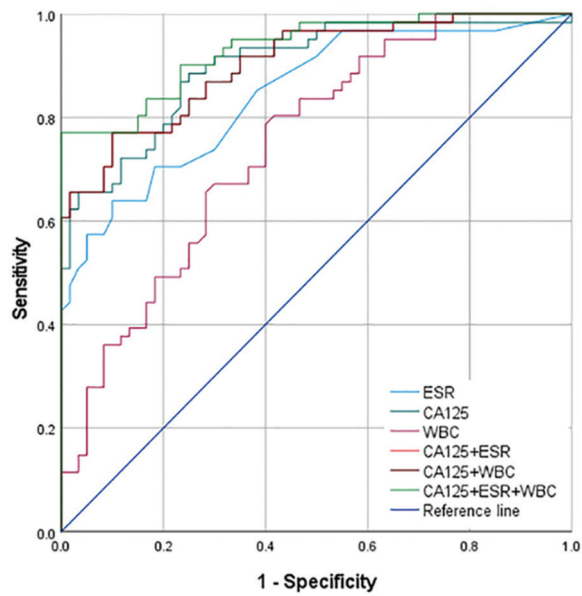


Figure S2. Receiver operating characteristic curves for CA125, ESR, and WBC used individually or combined to discriminate between healthy and ovarian cancer samples

Abbreviations: CA125: Cancer antigen 125; ESR: Erythrocyte sedimentation rate; WBC: White blood cell count.