Supplementary Matrial 1. Baseline Characteristics of the Included Studies

No.	Author, Year	Country	Study Design	Center	Characteristics	Patient Population		Intervention	Mechanism of Intervention	Duration of Intervention
						Sample Size (n)	Age			
1	Braicu et al., 2022 [19]	Germany	Prospective observational study	Multicenter	Eligible patients were females aged ≥18 years who were scheduled to undergo surgery for a suspicious adnexal mass and who had an available blood sample taken no more than 30days before surgery due to a pelvic mass. All included patients received a standard TVUS scan.	Benign tumors: 804 Ovarian cancer: 161 (Borderline tumor: 43)	Benign tumors: 45 (median), Ovarian cancer and borderline tumor: 59 (median)	Serum biomarker HE4 combined with CA125 and menopausal status to develop the risk of malignancy algorithm (ROMA), and then compared to the results of transvaginal ultrasound (TVUS)	CA125 (Cancer Antigen) is a high molecular weight transmembrane mucin that is overexpressed in 80% of epithelial ovarian cancers. HE4 (Human Epididymis Protein 4) is a protein secreted by epithelial cells that shows increased expression in the majority of ovarian cancers.	Single time-point
2	Suryawanshi et al., 2013 [2]	United States	Two-stage exploratory study	University of Pittsburgh Medical Center	The clinical and demographic characteristics of patients with endometriosis, EAOC of which six were endometrioid, seven were clear cell tumors, and one had mixed endometrioid/clear cell histology, and serous ovarian cancer. All cancer patients were treated at Magee-Womens Hospital of the University of Pittsburgh Medical Center (UPMC) between 2006–2011.	Endometriosis: 33 EAOC: 14 (endometroid: 6, clear cell tumor: 7, mixed: 1) SOC: 21 Control: 20	Endometriosis: 36.24 EAOC: 55.36 SOC: 65.52 Control: 38.75	MicroRNAs (miRNAs) was compared with histological results of each sample	MicroRNAs (miRNAs) are single-stranded non-coding small RNA molecules that regulate gene expression by inhibiting mRNA translation or by facilitating cleavage of the target mRNA, frequently dysregulated in human cancers.	Single time-point

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3	Zhou et al., 2015 [3]	China	Retrospective observational case–control study	Harbin Medical University	A total of 434 women who were initially diagnosed with endometriosis by ultrasound and then confirmed by laparoscopy and pathology after surgical treatment were included in this retrospective observational study from January 2021 to May 2024, and 517 healthy women who came to our hospital for routine health examinations and did not have an infection within six months as the control group.	Endometriosis: 434 Controls: 517	Endometriosis: 36±6.4 Controls: Not reported	Systemic immune-inflammation markers such as SII, SIRI, NLR, and PIV were compared with confirmed diagnosis through histological exam.	Endometriosis is a chronic systemic inflammatory disease. It causes: ↑ Monocytes/macrophages (cytokine-driven inflammation), ↑ Neutrophils (active inflammatory response), ↑ Platelets (inflammation-related thrombopoiesis), ↓ Lymphocytes (immune dysregulation)	Single time-point
4	Turgut, et al., 2019 [4]	Turkey	Retrospective comparative cohort study	Single center	Women were included if they were premenopausal, underwent laparoscopic or laparotomic surgery, had pathologically confirmed endometriosis, and were operated on between January 2012 and February 2017. Controls: Healthy women attending a gynecology clinic for routine check-up and no gynecologic disease or cancer	Endometriosis: 121 Control: 136	Endometriosis: 39 (median) Control: 35 (median)	Blood samples were collected in the early follicular phase to analyze NLR, LMR, MPV, and compared between laparoscopic surgery with histopathologically confirmed diagnosis of endometriosis	NLR reflects innate vs adaptive immune imbalance, LMR reflects chronic inflammatory and immune dysfunction, and MPV reflects platelet activation in inflammation	Single time-point

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5	MacSharry et al., 2024 [5]	Ireland	Prospective observational study	Single center	Women who were ≥18 years old, underwent planned gynecological laparoscopy, had suspected endometriosis or other benign gynecological indications	Endometriosis: 79 Controls: 50	Endometriosis: 36.4±6.8 Controls: 37.1±7.2	Pre-operative serum samples were analyzed for Interleukin-6 (IL-6) and Cancer Antigen-125 (CA-125). Biomarker levels were compared between women with surgically and histologically confirmed endometriosis and women with no evidence of endometriosis at laparoscopy	IL-6 is a pro-inflammatory cytokine and promotes angiogenesis, immune dysregulation, and survival of ectopic endometrial tissue. CA-125 is a marker of peritoneal irritation and inflammation, and is elevated in advanced endometriosis. Combining IL-6 (inflammatory signaling) with CA-125 (tissue irritation marker) would improve non-invasive detection of endometriosis compared with CA-125 alone.	Single time-point
6	Vanhie et al., 2019 [6]	Belgium	Discovery cohort and validation study	Single center	All patients had laparoscopically and histologically proven presence or absence (n=38) of endometriosis and had not used any hormonal medication in the 3 months prior to laparoscopy. In the control group, we only selected patients without endometriosis lesions during laparoscopic inspection.	Discovery cohort: Endometriosis: 82 Controls: 38 Validation cohort: Endometriosis: 60 Controls: 30	Discovery cohort: Endometriosis: 82 Controls: 38 Validation cohort: Endometriosis: 60 Controls: 30	Peripheral blood collection followed by plasma miRNA profiling using qRT-PCR	Differential expression of circulating microRNAs involved in inflammation, angiogenesis, and immune regulation, showing differential expression between eutopic and ectopic endometrial tissues	Single time-point

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7	Jansa et al., 2023 [7]	Slovenia	Case–control study	Single center	All the patients underwent laparoscopy owing to clinical indications (infertility and/or symptoms indicative of endometriosis) and confirmed with histology as well, then compared with patients with unexplained primary infertility	Discovery phase: Endometriosis: 32 Controls: 24 Validation phase: Endometriosis: 166 Controls: 71	Discovery phase: Endometriosis: 29.1§3.7 Controls: 30.1§4.2 Validation phase: Endometriosis: 30.4§4.2 Controls: 30.3§ 4.0	Blood samples are collected to measure COMP, TGFBI, and CA-125 to evaluate COMP and TGFBI alone and in combination with CA-125 between cases and controls.	In peritoneal fluid, there are significant differences in the concentrations of COMP and TGFBI and small, but non-significant, differences in angio-tensinogen.	Single time-point
8	Amanda et al., 2024 [8]	Indonesia	Case-control study	University medical centers	Women with pathologically confirmed endometriosis (supported by pelvic ultrasound) vs non-endometriosis controls (primary/secondary infertility, no visible endometriosis lesions)	Total n=40 (Endometriosis n=20; Control n=20)	Endometriosis= 35.20±5.9; Non-Endometriosis= 33.05±5.8	Menstrual blood collection and qPCR measurement of gene expression (aromatase, SF-1, HSD17B2); comparison with eutopic endometrial tissue	Evaluation of menstrual blood gene expression as non-invasive diagnostic biomarkers to discriminate endometriosis vs non-endometriosis	Single time-point
9	Moustafa et al., 2020 [9]	USA	Prospective study (diagnostic accuracy study)	Yale University Medical Center	Women aged 18–49 undergoing laparoscopy for suspected benign gynecologic conditions; Endometriosis confirmed by operative findings/histopathology; Controls = benign gynecologic pathology/no visual disease	Total=100 (Endometriosis= 41; Control=59)	Mean age: Endometriosis 34.1±7.1; Control 36.9±8.2	Serum microRNA panel measured pre-operatively: miR-125b-5p, miR-150-5p, miR-342-3p, miR-451a, miR-3613-5p, let-7b (qRT-PCR);	Circulating serum miRNA expression profiling used as non-invasive diagnostic biomarkers; classifier predicts endometriosis presence vs control	Single time-point

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								Random forest classifier		
10	Nouri et al., 2025 [10]	Iran	Retrospective study	Shohada Tajrish Hospital, Tehran	Females undergoing elective surgery; case group: pathologically confirmed endometriosis; controls: benign ovarian tumors/benign conditions; excluded: uterine leiomyoma, adenomyosis, polyp, endometrial hyperplasia, PID, malignant ovarian tumors, pregnancy/breastfeeding, chronic infectious/autoimmune/endocrine disease	Total: 346 (Cases: 230; Controls: 116)	Mean age: Cases 34.08±7.83; Controls 31.31 ± 11.97	Biomarker assessment: CA-125, CA 19-9, CEA, AMH, WBC count, platelet count, NLR; diagnostic model also assessed CA-125 + NLR combination	Non-invasive diagnostic evaluation using blood-based biomarkers and ROC analysis to assess diagnostic performance	Single time-point
11	Wang et al., 2025 [11]	China (Jiaxing)	Retrospective case–control study	Single-center hospital-based (Jiaxing Maternal and Child Health Hospital)	Women undergoing gynecological surgery for ovarian cysts; cases confirmed ovarian endometriosis via pathology; controls: benign ovarian tumors/cysts	Total 885 (441 cases; 444 controls)	Mean age: controls 36.22±8.43; endometriosis 36.64±7.22	Biomarkers measured pre-op: CA125 + thyroid function markers + thyroid autoantibodies (TPOAb, TGAb); diagnostic model combining CA125+TPOAb+TGAb	Hypothesis: thyroid autoimmunity contributes to endometriosis; combining thyroid autoantibodies with CA125 improves diagnostic performance	Single time-point

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12	Zhou et al., 2024 [3]	China (Harbin) + New Zealand (collaboration)	Retrospective observational study	Single-center (First Affiliated Hospital of Harbin Medical University)	Women diagnosed with endometriosis by ultrasound, then confirmed by laparoscopy + pathology, compared with healthy controls (routine health exams)	Endometriosis: 434; Controls: 517	Mean age of endometriosis: 36±6.4 years	Non-invasive diagnostic indices: SII, SIRI, NLR, PIV (from routine blood tests)	Immune-inflammation indices derived from neutrophils/lymphocytes/monocytes/platelets to predict the probability of endometriosis	Single time-point
13	Yaseen et al., 2025 [12]	Iraq	Case-control study	Specialized clinics, Al-Sadr Teaching Hospital	Premenopausal women; cases = laparoscopically confirmed endometriosis; controls = age-matched; clinical variables collected (smoking, infertility, pain severity/VAS); fasting serum biomarkers measured in early follicular phase (IL-6, TNF-α, CRP, LIF)	Total = 90 (45 EMS, 45 controls)	Age categories: <30, 30–40, >40 (distribution reported)	Serum inflammatory biomarkers measurement (IL-6, TNF-α, CRP, LIF)	Inflammatory cytokines/CRP reflect systemic inflammatory activity associated with endometriosis. Measured using ELISA + immunoturbidimetric assay; multivariable regression + ROC used to assess diagnostic utility.	Single time-point
14	Srivastava et al., 2025 [13]	India	Observational single-center case-control pilot study	Single center (tertiary care SGPGIMS Lucknow)	Women 18–45 yrs; Endometriosis confirmed by USG/MRI/laparoscopy; included endometriosis (minimal–severe), non-endometriosis pelvic pain pts, and healthy controls; samples: serum + menstrual fluid	Total n=103 (Endometriosis 65; Non-endometriosis 15; Healthy 23)	Median age: Healthy 32 (27-36); Non-endo 31 (28-36); Endo 33 years (28-38)	Index test: SNCG & BCL6 levels measured in serum and menstrual fluid using sandwich ELISA	SNCG & BCL6 are proteins linked to endometriosis pathology; quantified via ELISA to discriminate endometriosis vs controls; combined marker (SNCG+BCL6) was also evaluated using AUROC	Single time-point
15	Abedi et al., 2025 [14]	Iraq	Case control	Single center	The presence of visible endometriotic lesions at laparoscopy and a positive histology report.	Case = 45 (definitive endometriosis confirmed by both laparoscopy and HPA) Control = 45 (healthy woman)	Endo group = 32.4±1.2 Control group = 30.7±6.0	Biomarker (IL-6, TNF-alpha, Glycodelin, Activin A, MCP-1, LIF, CA-125, hs-CRP)	Serum concentrations of all eight biomarkers were determined using commercially available ELISA kits according to the manufacturers' instructions. All assays were performed in duplicate in the central	Single time-point

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									laboratory of Al-Sadr Teaching Hospital. The absorbance was measured at 450 nm using a microplate ELISA reader (Bio-Rad iMarkTM Microplate Absorbance Reader). A four-parameter logistic curve fit was used to generate the standard curve for each assay, and the concentrations of the biomarkers in the samples were calculated from it.	
16	Guo et al., 2022 [15]	China	Retrospective	Single center	Patients with benign ovarian tumors other than endometriosis, as confirmed by histopathological examination tumor types included mature teratomas, serous cystadenomas, mucinous cystadenomas, simple cysts, and other benign ovarian tumors.	EM group = 145 Cyst group = 127	EM group= 31.89±7.45 Cyst group= 30.04±8.70	Platelet-to-Lymphocyte Ratio and CA125 Level as a Combined Biomarker	The PLR can reflect the relative changes in the platelets and lymphocytes in the body, thus indirectly indicating the body's immune disorder. Serum CA125 is yet the most commonly used biomarker in the diagnosis and follow-up of patients with endometriosis despite its high false-positive rate and low specificity. CA125 is elevated in ovarian cancer, endometrial cancer, pelvic inflammatory disease, and early pregnancy.	Single time-point

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17	Herranz-Blanco et al., 2023[16]	Italy	Prospective	Single center	Reproductive age patients (18–50 years old) and were undergoing a laparoscopy due to suspicion of endometriosis. Patients were classified as cases if endometriosis was confirmed by laparoscopy and histological evaluation of excised lesions and as controls if endometriosis lesions could not be visualized during the procedure or confirmed by histology.	Controls = 68 Cases = 136	Controls= 33.5±5.96 Cases= 35.6±6.42	ELISA Method: CA125 and BDNF Concentrations	The IVD test ELISA (Enzyme-Linked Immunosorbent Assay) is a solid-phase sandwich enzyme-immunoassay for quantitatively determining BDNF and CA125 in human serum. Each biomarker was determined in a different set of wells. The ELISA plate was coated with an antibody directed against BDNF or CA125. BDNF or CA125 from samples and standards were bound to the antibodies and immobilized on the plate.	Single time-point