Supplementary Data 1. Selection of model

(A)
The first motivation of the study analysis is to use the principal component analysis (PCA) for model selection (Table a).

Table a: KMO and Bartlett's Test results and Rotated Component Matrix

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.													0.71
Bartlett's Test of Sphericity													<0.001
Factors	BMI	Systol	FBS	Total Cholestrol	TG	HDL	LDL	Insulin	HOMAIR	TSP1	Leptin	VEGF	LAPindex
1	0.817	0.373	0.307	0.711	0.819	-0.49	0.726	0.773	0.779				0.884
2										0.89	0.88	0.71	

Two factors were extracted with PCA. TSP-1, Leptin, and VEGF were collected in the second factor and other variables were in collected in the first factor. With this approach, we could fit two logistic regression models. The full models show as follow,

$$logistic\ (PCOS) = \beta_0 + \beta_1 BMI + \beta_2 systol + \beta_3 TGC + \beta_4 TG$$

$$+ \beta_5 HDL + \beta_6 LDL + \beta_7 insulin + \beta_8 HOMA + \beta_9 LAP \qquad (1)$$

$$logistic\ (PCOS) = \beta_0 + \beta_1 TSP1 + \beta_2 Leptin + \beta_3 VEGF \qquad (2)$$

We added interaction between variables in models and used forward method for selection of final model. Finally best model is selected as follow:

$$logistic\ (PCOS) = \beta_0 + \beta_1 BMI + \beta_2 TSP1 + \beta_3 VEGF + \beta_4 Leptin \times TSP1$$

(B)
With these examples, we exhibited the final model for prediction of PCOS probability.
Example 1:
Consider the patient with BMI=20, TSP-1=28.43, VEGF=240.8 and Leptin=0.423

$$logit\left(\frac{P(PCOS)}{1-P(PCOS)}\right) = -6.752 + (0.455 * 20) + (-0.1 * 28.43) + (0.004 * 240.8) + (0.014 * 28.43 * 0.423)$$
$$= -24.9504$$

$$P(PCOS) = \frac{e^{-24.9504}}{1+e^{-24.9504}} = 0.66$$

This means that the probability of PCOS for this patient is 0.66; the characteristics of this person were as a real patient in PCOS group of our manuscript.

Example 2:
Consider the another person with BMI=20.43, TSP-1=60.1, VEGF=492.8.8 and Leptin=0.7,

$$logit\left(\frac{P(PCOS)}{1-P(PCOS)}\right) = -6.752 + (0.455 * 20.43) + (-0.1 * 60.1) + (0.004 * 492.8) + (0.014 * 60.1 * 0.7)$$
$$= -0.90617$$

$$P(PCOS) = \frac{e^{-0.90617}}{1+e^{-0.90617}} = 0.28$$

This means that the probability of PCOS for this patient is 0.28; this probability indicates that the person is Negative-PCOS; the characteristics of this person are as a real person in control group of our manuscript.

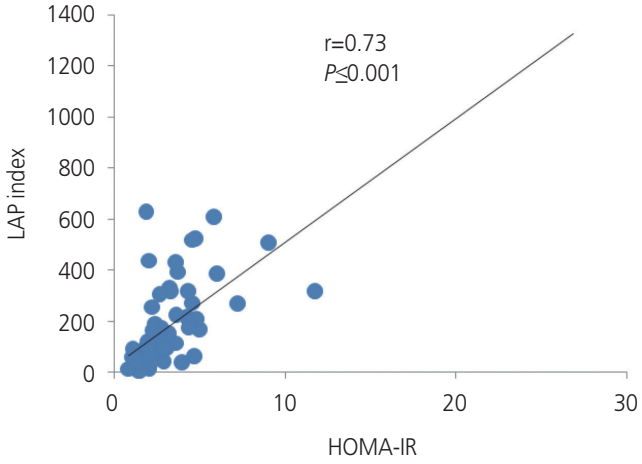

Figure A. Correlation between HOMA-IR and LAP-index in cases and control group. HOMA, homeostasis model assessment; IR, insulin resistance; LAP, lipid accumulation product.