Results

Our study included 25 women aged from 18 to 40 years, of regular menses, followed in infertility clinic and they were arranged for laparoscopic examination for primary infertility and suspected endometriosis (cyclic or chronic pelvic pain, dysmenorrhea, dysparunia or ultrasound examination). They were not taking any type of hormonal treatments in the past 3 months prior surgery, no signs of ovarian failure and no history of ovarian cancer. Venous blood samples were taken at time of surgery before anesthesia and the day of menstrual cycle was recorded for every patient.

Then the patients are divided according to results of histopathology into 2 groups, the study (histo-pathologically proven pelvic endometriosis) group and control (pelvic lesion free) group. Serum concentrations of VEGF were measured in the two groups using specific commercial sandwich enzyme-linked immune-sorbent assays (ELISA) according to manufacturer's protocols (Quantikine; R&D systems Inc, Minneapolis, MN, USA).

	Number of Patients	Percent (%)	Valid Percent (%)
Cases	15	60.0	60.0
Control	10	40.0	40.0
Total	25	100.0	100.0

Table (5): Number and Percent of Patients in both groups.

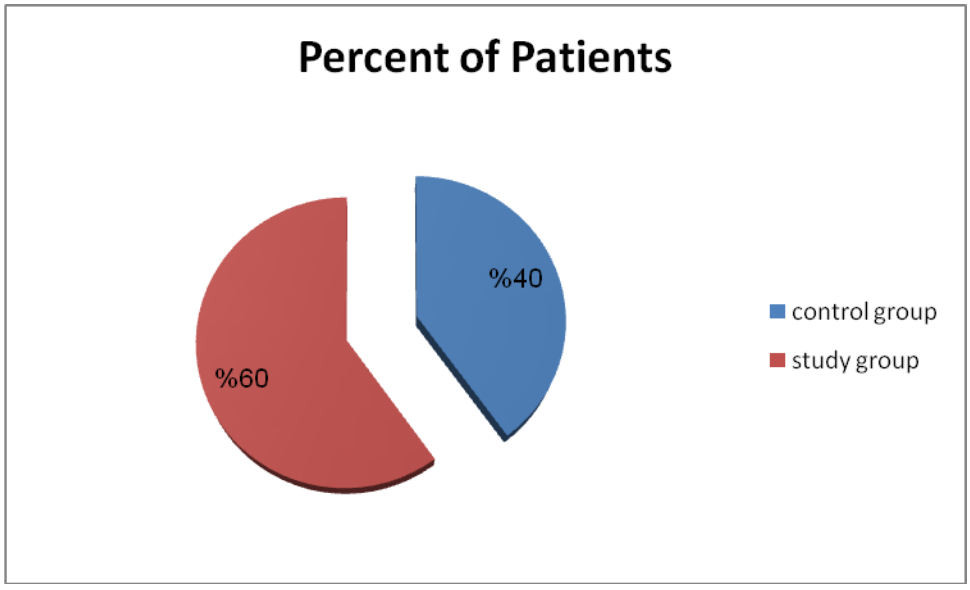

Fig. (9): Percentage of Patients in both groups.

Pelvic Pain	Number of Patients	Percent (%)	Valid Percent (%)
No	14	56.0	56.0
Yes	11	44.0	44.0
Total	25	100.0	100.0

Table (6): Number and Percent of patients suffering from Pelvic Pain in both groups.

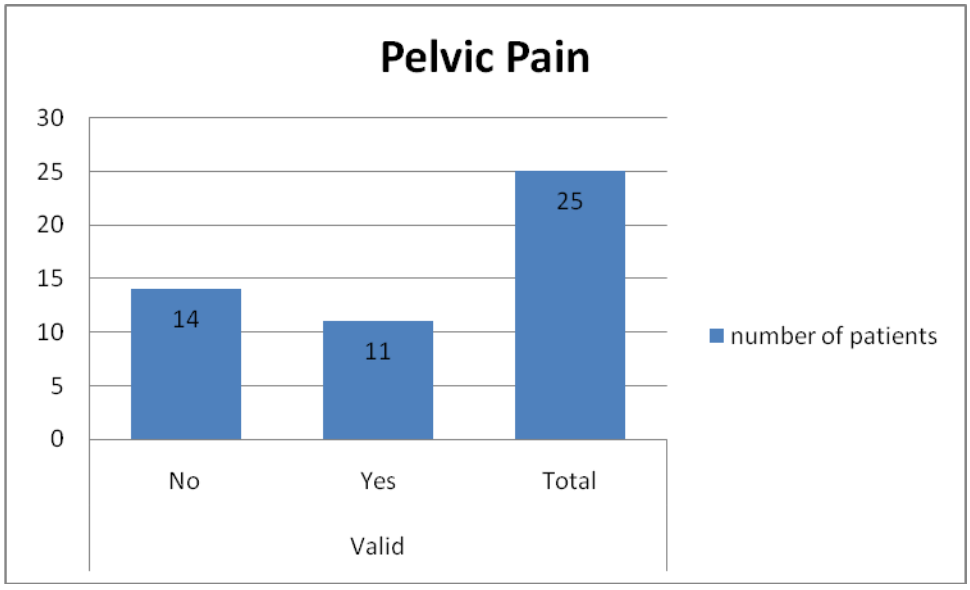

Fig. (10): Number of patients suffering from Pelvic Pain in both groups.

Dysmenorrhea	Number of Patients	Percent (%)	Valid Percent (%)
No	8	32.0	32.0
Yes	17	68.0	68.0
Total	25	100.0	100.0

Table (7): Number and Percent of patients suffering from Dysmenorrhea in both groups.

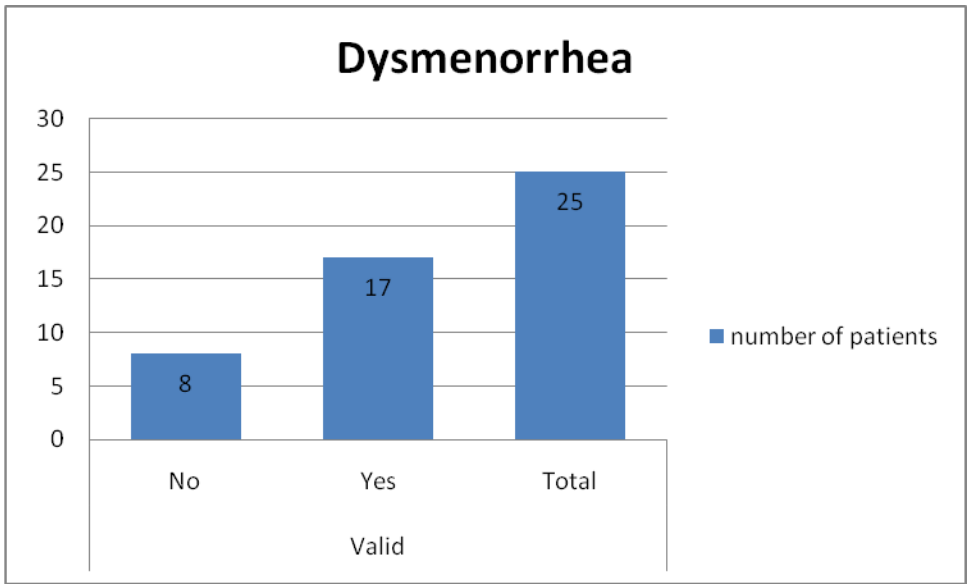

Fig. (11): Number of patients suffering from Dysmenorrhea in both groups.

Dyspareunia	Number of Patients	Percent (%)	Valid Percent (%)
No	12	48.0	48.0
Yes	13	52.0	52.0
Total	25	100.0	100.0

Table (8): Number and Percent of patients suffering from Dysmenorrhea in both groups.

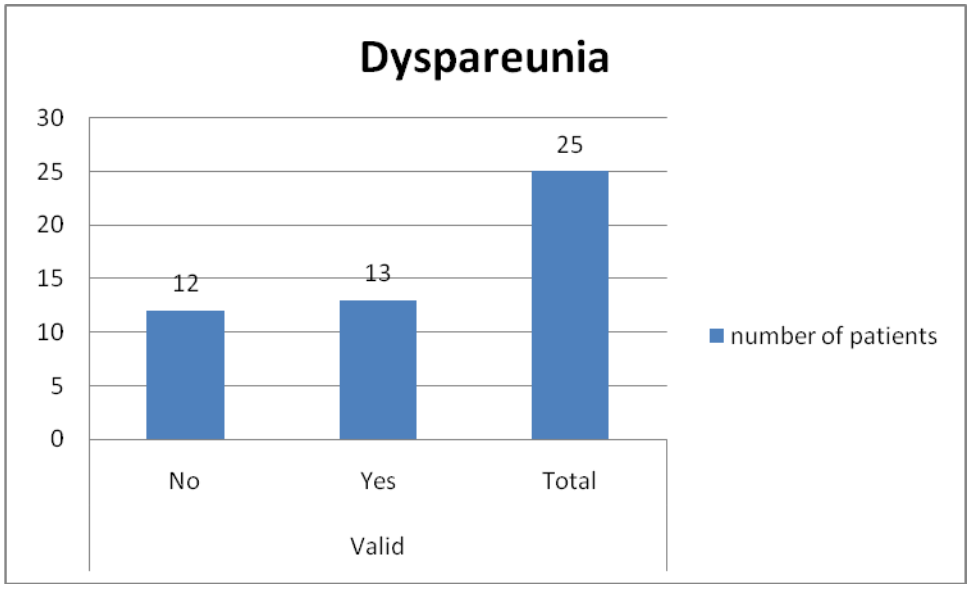

Fig. (12): Number of patients suffering from Dysmenorrhea in both groups.

Loacation of Pelvic Endometriosis		Number of Patients	Percent (%)	Valid Percent (%)
Control	No	10	40.0	40.0
Cases	Deep	3	12.0	12.0
	Multiple	9	36.0	36.0
	Ovary	2	8.0	8.0
	Peritoneum	1	4.0	4.0
Total		25	100.0	100.0

Table (9): Location of Pelvic Endometriosis in Patients.

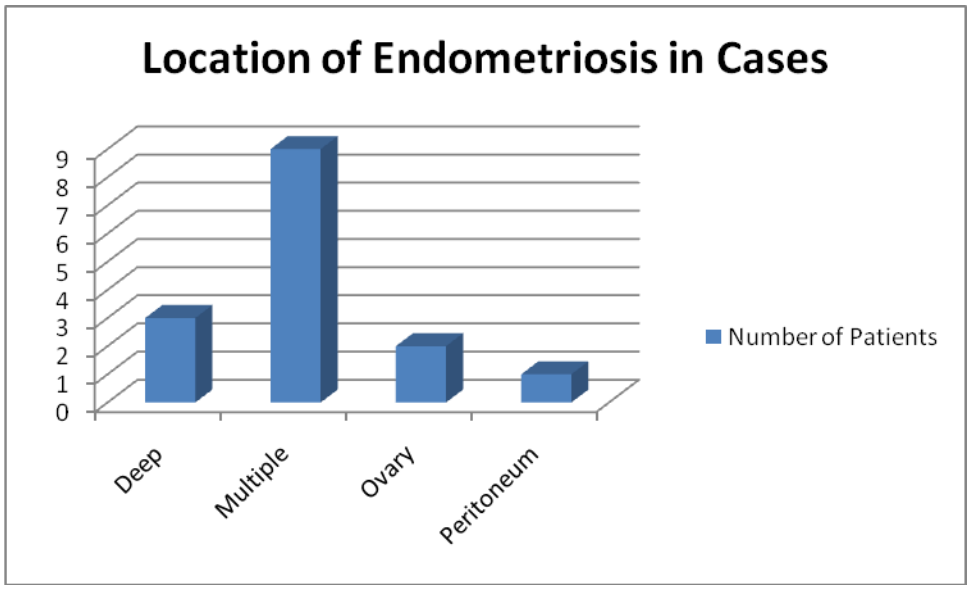

Fig. (13): Location of Pelvic Endometriosis in Cases.

	Minimum	Maximum	Mean	Standard Deviation (SD)
Age	23	37	28.92	3.239
Menstrual Day	6	10	8.04	1.513
VEGF pg/ml.	96	404	233.92	109.079

Table (10): Descriptive Statistics.

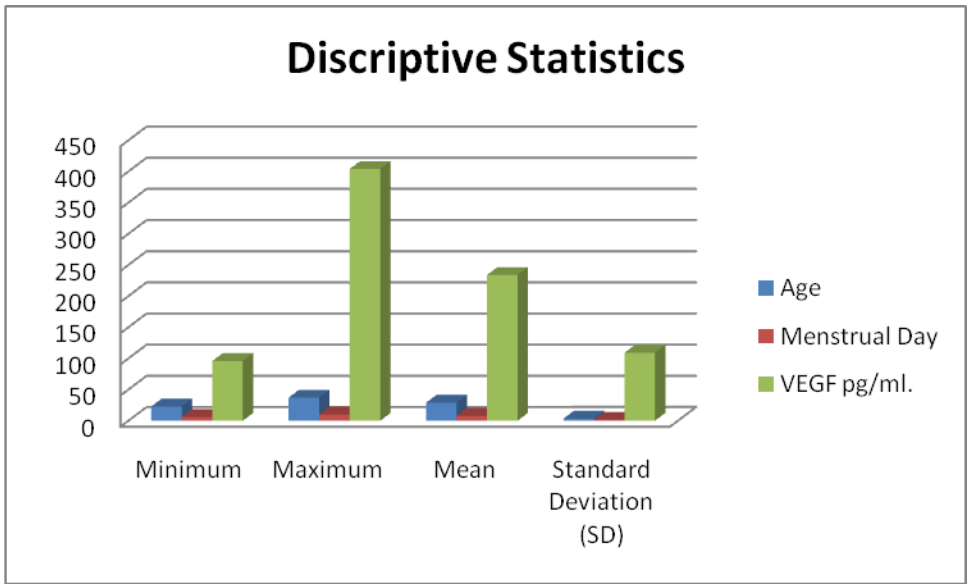

Fig. (14): Descriptive Statistics.

			Group		Total
			Cases	*Controls*	
Pelvic Pain	***No***	***Count***	6	8	14
		% within group	40.0%	80.0%	56.0%
	Yes	***Count***	9	2	11
		% within group	60.0%	20.0%	44.0%
Total		***Count***	15	10	25
		% within group	100.0%	100.0%	100.0%

Chi-Sqare Tests: P value = 0.048

Table (11): Correlation between both groups regarding Pelvic Pain.

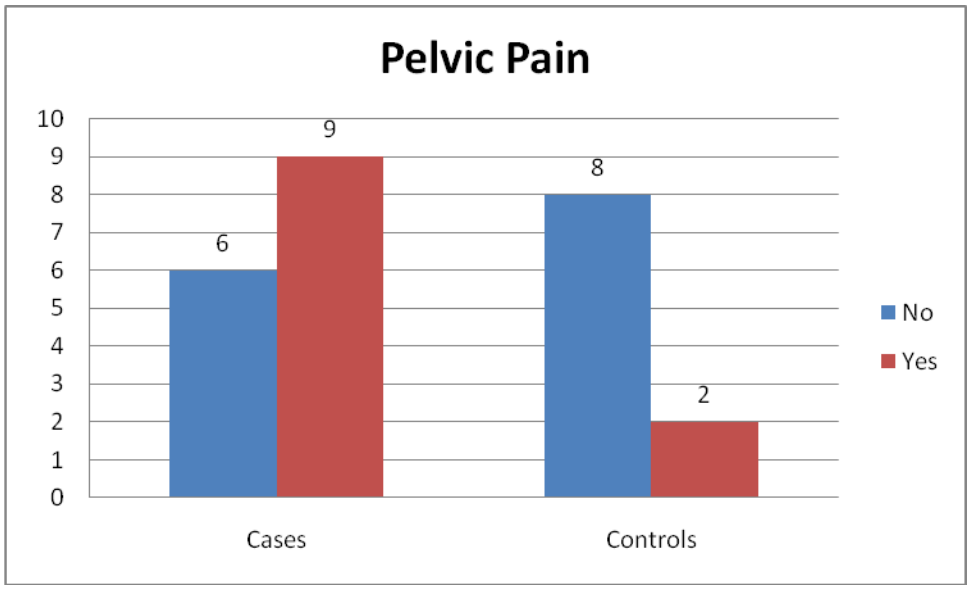

Fig. (15): Number of Pelvic Pain Patients in both groups.

			Group		Total
			Cases	*Controls*	
Dysmenorrhea	***No***	***Count***	5	3	8
		% within group	33.3%	30.0%	32.0%
	Yes	***Count***	10	7	17
		% within group	66.7%	70.0%	68.0%
Total		***Count***	15	10	25
		% within group	100.0%	100.0%	100.0%

Chi-Sqare Tests: P value = 0.607

Table (12): Correlation between both groups regarding Dysmenorrhea.

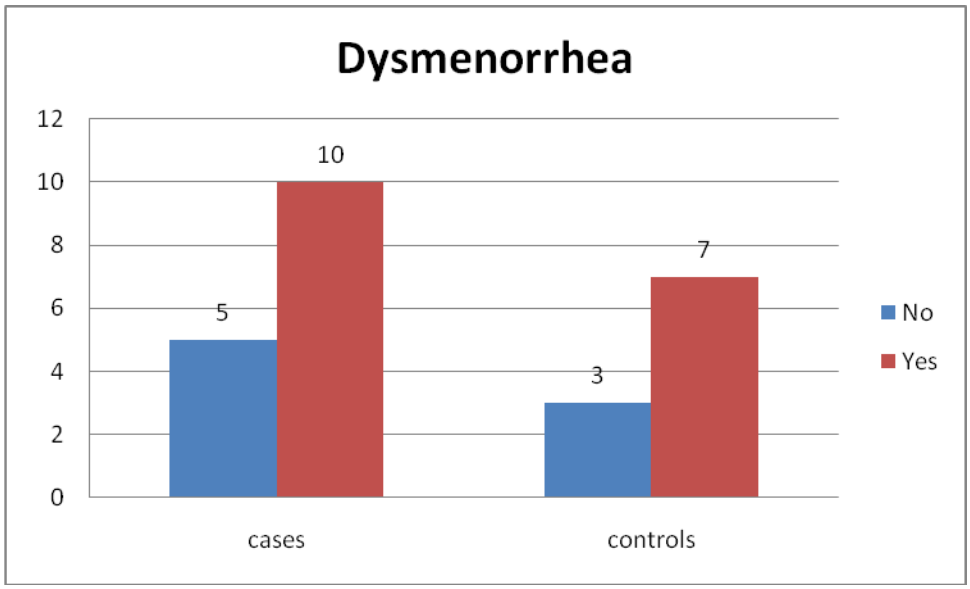

Fig. (16): Number of Dysmenorrhea Patients in both groups.

			Group		Total
			Cases	*Controls*	
Dyspareunia	***No***	***Count***	5	7	12
		% within group	33.3%	70.0%	48.0%
	Yes	***Count***	10	3	13
		% within group	66.7%	30.0%	52.0%
Total		***Count***	15	10	25
		% within group	100.0%	100.0%	100.0%

Chi-Sqare Tests: P value = 0.072

Table (13): Correlation between both groups regarding Dyspareunia.

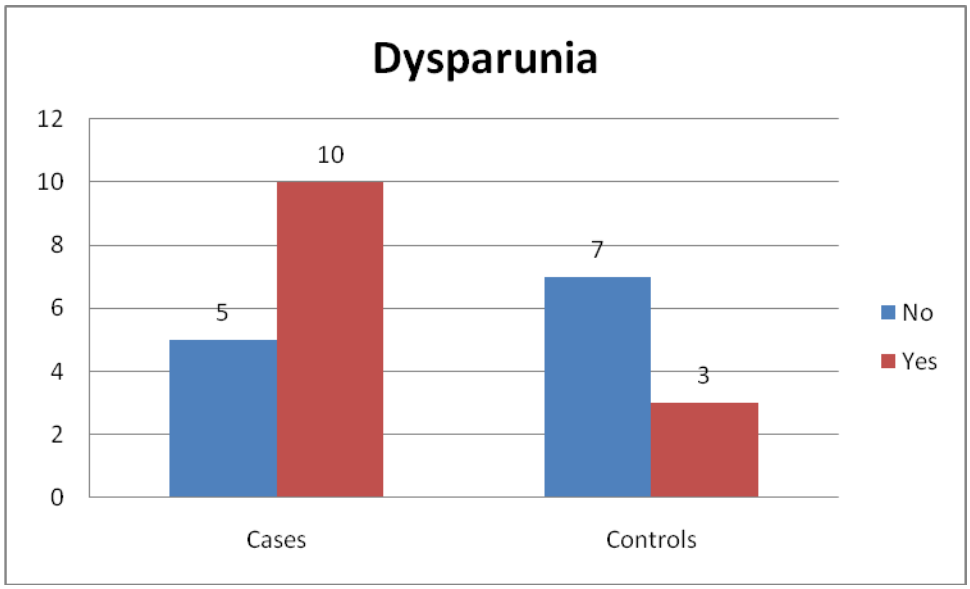

Fig. (17): Number of Dyspareunia Patients in both groups.

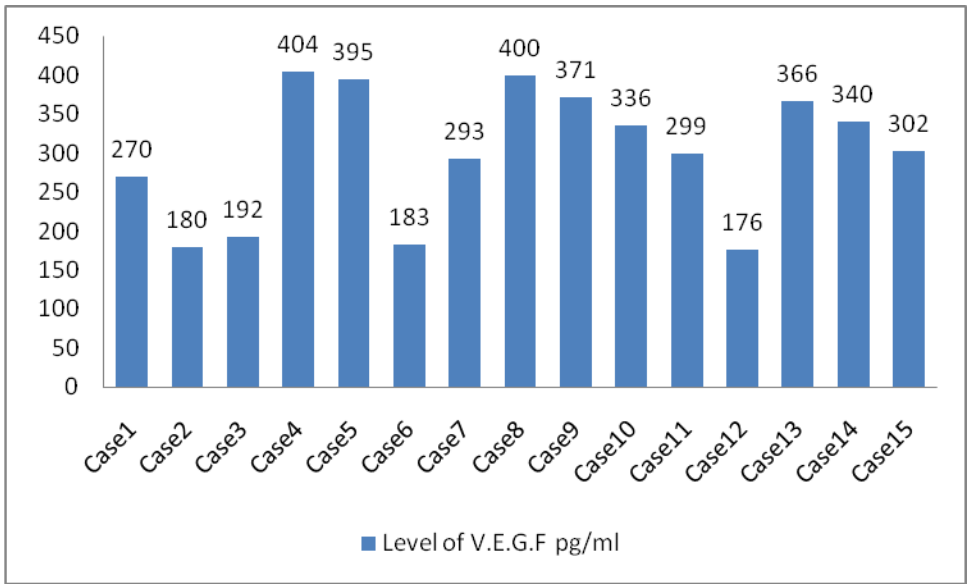

Fig. (18): Serum Levels of VEGF in the study group.

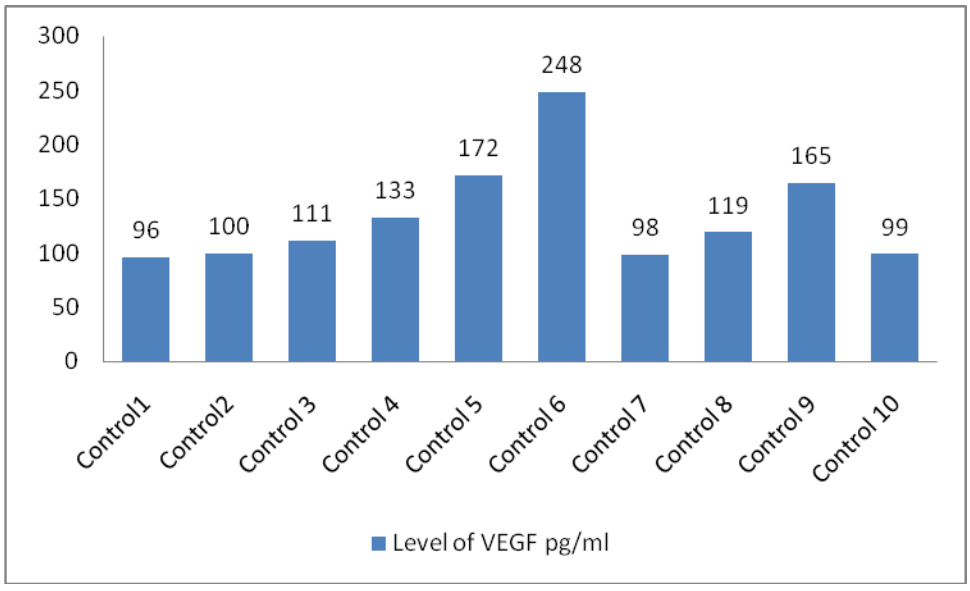

Fig. (19): Serum Levels of VEGF in the control group.

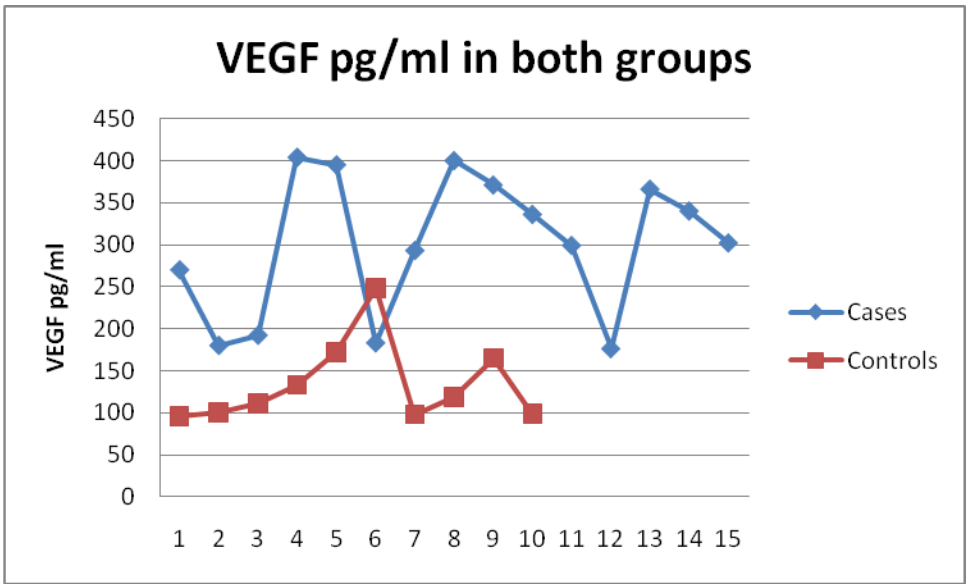

Fig. (20): Correlation of serum VEGF in both groups.

	Age	Menstrual days	VEGF pg/ml
Minimum	23	6	176
Maximum	37	10	404
Mean	29.87	8.33	300.47
Median	30.00	8.00	302.00
Std.Deviation	3.662	1.397	83.757

Table (14): Statistics in the Study group regarding Age, Menstrual days and Serum levels of VEGF.

	Age	Menstrual days	VEGF pg/ml
Minimum	25	6	96
Maximum	30	10	248
Mean	27.50	8.33	134.1
Median	27.50	7.60	115.00
Std.Deviation	1.841	1.647	48.622

Table (15): Statistics in the Control group regarding Age, Menstrual days and Serum levels of VEGF.

	Age	Menstrual days	VEGF pg/ml
Minimum	23	6	96
Maximum	37	10	404
Mean	28.92	8.04	233.92
Median	29.00	8.00	192.00
Std.Deviation	3.239	1.513	109.079

Table (16): Statistics in the both groups regarding Age, Menstrual days and Serum levels of VEGF.

The Receiver Operating Characteristic (ROC) curve was constructed to obtain the most sensitive and specific cut-off values for VEGF test through Area under the Curve (AUC) figure ( ).

The most sensitive and specific cut-off value for serum VEGF concentration predicting endometriosis in study group (cases) was (174 pg/ml), with specificity of (99%), sensitivity of (100%).

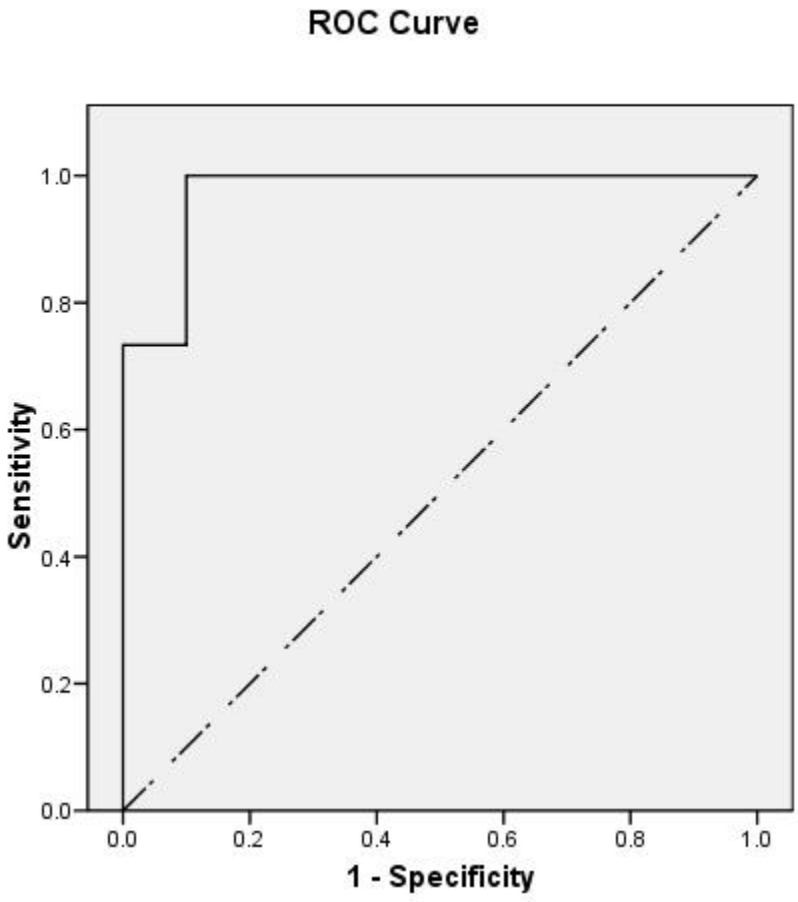

Fig. (21): The Receiver Operating Characteristic (ROC) curve.

Area	Std. Error[a]	Asymptomatic Sig.[b]	Asymptomatic 95% Confidence Interval	
			Lower bound	Upper bound
0.973	0.030	0.000	0.915	1.032

a. under the nonparametric assumption.

b. Null hypothesis: true area = 0.5

Table (17): Area under the Curve.

Group	Valid Number (list wise)
Positive[a]	15
Negative	10

a. The positive actual state is Cases.

Table (18): Case Processing Summary.

Larger values of the test result variables indicate stronger evidence for a positive actual state.

Positive if Greater Than or Equal To(a)	Sensitivity	1-Specificity
95.00	1.000	1.000
97.00	1.000	0.900
98.50	1.000	0.800
99.50	1.000	0.700
105.50	1.000	0.600
115.00	1.000	0.500
126.00	1.000	0.400
149.00	1.000	0.300
168.50	1.000	0.200
174.00	1.000	0.100
178.00	0.933	0.100
181.50	0.867	0.100
187.50	0.800	0.100
220.00	0.733	0.100
259.00	0.733	0.000
281.50	0.667	0.000
296.00	0.600	0.000
300.50	0.533	0.000
319.00	0.467	0.000
338.00	0.400	0.000
353.00	0.333	0.000
368.50	0.267	0.000
383.00	0.200	0.000
397.50	0.133	0.000
402.00	0.067	0.000
405.00	0.000	0.000

a. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.

Table (19): Test Result Variable(s): VEGF.