RESULTS

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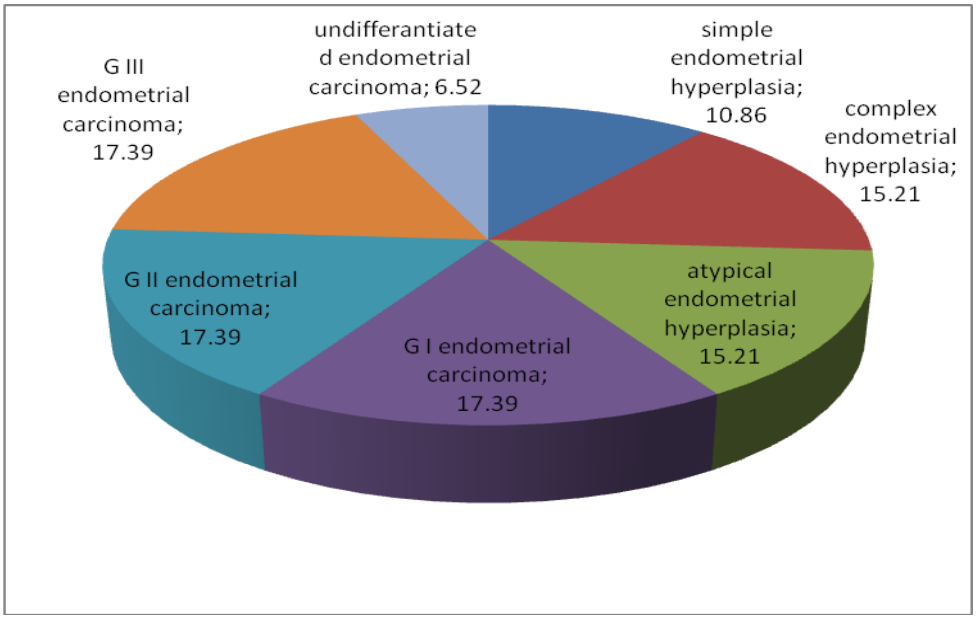
Histopathological examination of all 46 selected endometrial lesions studied represented 19 cases of endometrial hyperplasia (41.30%) [5 simple hyperplasia (10.86%) **(figure 7)**, 7 complex hyperplasia (15.21%) **(figure 8)**, and 7 atypical hyperplasia (15.21%) **(figure 9)**] and 27cases of endometrial adenocarcinoma (58.69%) [8 grade I adenocarcinoma (GI) (17.39%) **(figure 10)**, 8 grade II adenocarcinoma (GII) (17.39%) **(figure 11)**, 8 grade III adenocarcinoma (GIII) (17.39%) **(figure 12)**, and 3 undifferentiated adenocarcinoma (6.52%) **(figure 14)**]. In addition 4 apparently normal endometrial tissue specimens [2 proliferative cases **(figure 5)** and 2 secretory cases **(figure 6)**] were taken as control ***(Table 1 and Graph1).***

Table (1): Percentage of the 46 endometrial lesions:

Endometrial lesion	No. of cases	% of cases
Endometrial hyperplasia	19	41.4
- simple hyperplasia	5	10.86
- complex hyperplasia	7	15.21
- atypical hyperplasia	7	15.21
Endometrial carcinoma	27	58.69
- GI carcinoma	8	17.39
- GII carcinoma	8	17.39
- GIII carcinoma	8	17.39
- undifferentiated carcinoma	3	6.52
Total	46	100

Graph (1): Percentage of the 46 endometrial lesions:



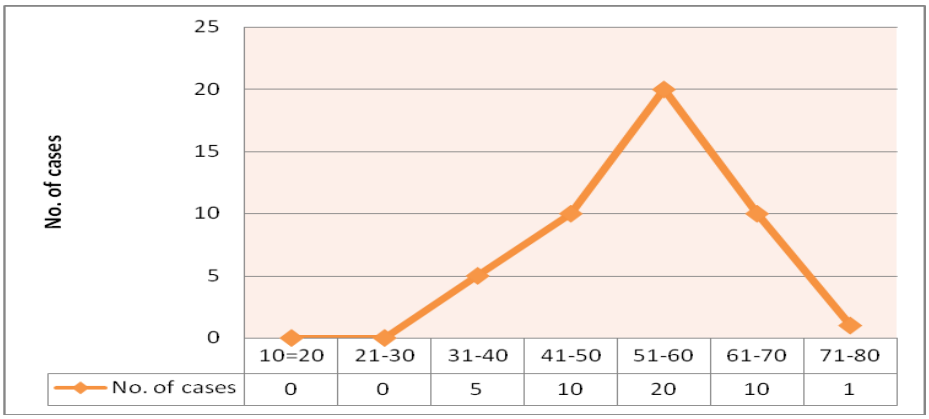
- Age groups in different endometrial lesions:

The age of patients ranged from 36 to 73 years, with a mean age of 56.5 years with standards deviation (SD) ± 8.64. The age distribution is shown in ***(Table 2 and Graph2).***

Table (2): Age groups of different endometrial lesions:

Age group	No.	%	Mean (Years)	Range (Years)
10-20	0	0	0	0
21-30	0	0	0	0
31-40	5	10.8	37.8	36-39
41-50	10	21.7	46.2	43-49
51-60	20	43.5	57.3	52-60
61-70	10	21.7	68.3	61-69
71-80	1	2.3	73	73
Total	46	100	56.5±8.64	36-73

Graph (2): Age groups of different endometrial lesions:



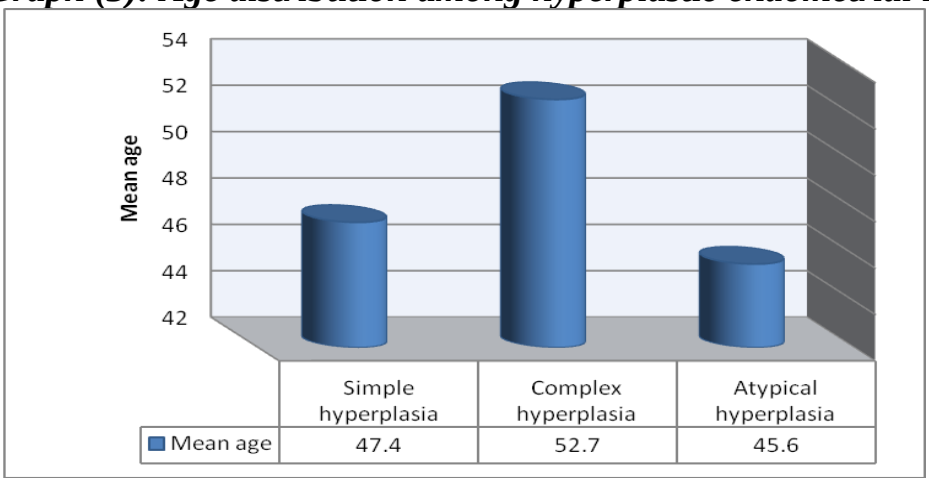
-Age distribution among hyperplastic endometrial lesions:

The peak age incidence in endometrial hyperplasia was from 36 – 58 years. The mean age incidence was 48.6 years with SD ± 5.24 ***(Table 3 and Graph3).***

Table (3): Age distribution among hyperplastic endometrial lesions:

Enomtrial Hyperplasia	No. of cases	%	Range(years)	Mean(years)
Simple hyperplasia	5	26	37-57	47.4
Complex hyperplasia	7	37	42-58	52.7
Atypical hyperplasia	7	37	36-56	45.6
Total	19	100	36-58	48.6±5.24

Graph (3): Age distribution among hyperplastic endometrial lesions:



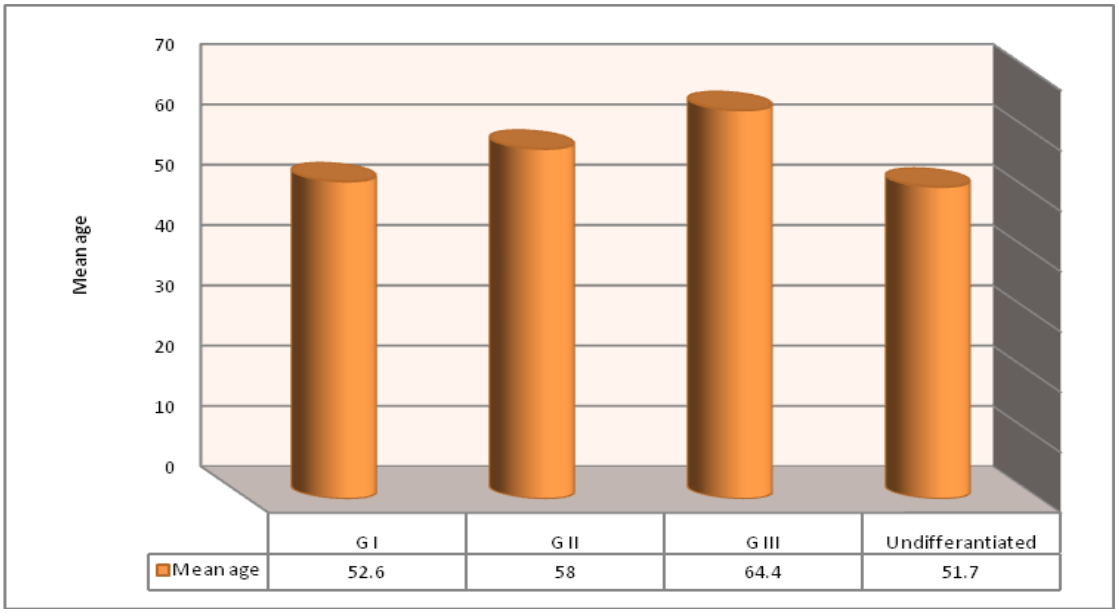
- Age distribution among cases of endometrial carcinoma:

The peak age incidence in endometrial adenocarcinoma was from 38-73 years. The mean age incidence was 56.7 years with SD ± 6.82 ***(Table 4 and Graph 4).***

Table (4): Age distribution among cases of endometrial carcinoma:

Enomtrial carcinoma	No. of cases	%	Range(years)	Mean(years)
= Grade I	8	30	38-69	52.6
= Grade II	8	30	48-66	58
= Grade III	8	30	48-73	64.4
= Undifferantiated	3	10	46-61	51.7
Total	27	100	38-73	56.7±6.82

Graph (4): Age distribution among cases of endometrial carcinoma:



Lymph node status of the examined endometrial carcinoma cases:

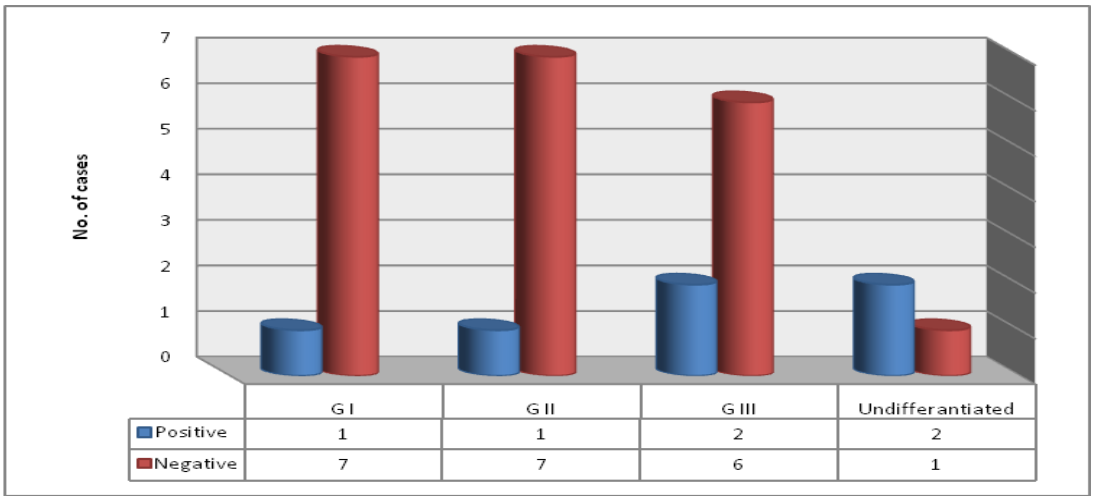
Regarding the Lymph node status: in Grade I one case (12.5%) was positive for lymph nodes metastasis ,Grade II one (12.5%) ,Grade III two (25%) and in undifferentiated endometrial carcinoma two cases (67%). The highest incidence of lymph nodes metastasis was within cases of undifferentiated endometrial adenocarcinoma ***(Table5 and Graph5).***

Table (5): Distribution of endometrial carcinoma cases according to lymph nodes metastasis:

Endometrial carcinoma	No. of cases	Positive		Negative	
		No.	%	No.	%
_ G I	8	1	12.5	7	87.5
_ G II	8	1	12.5	7	87.5
_ G III	8	2	25	6	75
_ Undifferentiated	3	2	67	1	33
Total	27	6	22	21	78

Statistically no significant correlation between lymph node metastasis and different grades of endometrial adenocarcinoma was found ***(p=0.094).***

Graph (5): Distribution of endometrial carcinoma cases according to lymph nodes metastasis:



Staging of the examined endometrial carcinoma cases:

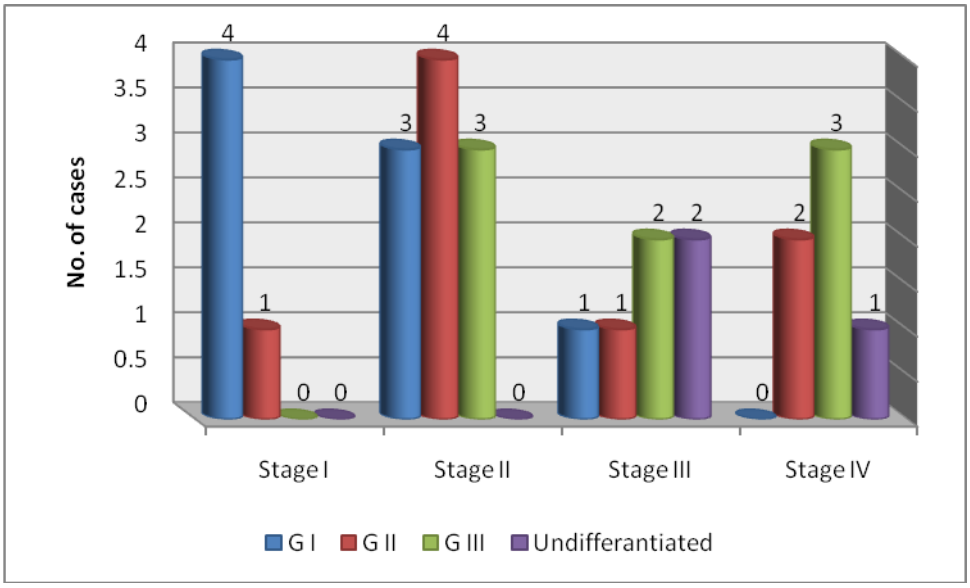
According to FIGO staging : in stage I there were 5 cases (18%), stage II 10 cases (36%), stage III 6 cases (23%) and in stage IV 6 cases(23%) ***(Table 6 and Graph6).***

Table (6): Distribution of endometrial carcinoma cases according to the stage:

Endometrial carcinoma	No. of cases	stage							
		I		II		III		IV	
		No.	%	No.	%	No.	%	No.	%
G I	8	4	50	3	37	1	13	0	0
G II	8	1	13	4	50	1	12	2	25
G III	8	0	0	3	37	2	25	3	38
Undifferentiated.	3	0	0	0	0	2	67	1	33
Total	27	5	18	10	36	6	23	6	23

There was significant statistical correlation between different grades of endometrial adenocarcinoma and their stages ***(p<0.01).***

Graph (6): Distribution of endometrial carcinoma cases according to the stage:



Vascular invasion of the examined endometrial carcinoma cases:

Examination of vascular invasion of the endometrial adenocarcinoma cases revealed that 8 cases (30%) showed vascular invasion **(figure 13),** while 19 (70%) were free of vascular invasion ***(Table 7 and Graph7).***

Table (7): Distribution of endometrial carcinoma cases according to vascular invasion:

Endometrial carcinoma	No. of cases	positive		negative	
		No.	%	No.	%
G I	8	2	25	6	75
G II	8	2	25	6	75
G III	8	3	38	5	62
Undifferentiated	3	1	33	2	67
Total	27	8	30	19	70

There was no significant statistical correlation between different grades of endometrial adenocarcinoma and the presence of vascular invasion ***(p=0.753).***

Graph (7): Distribution of endometrial carcinoma cases according to vascular invasion:

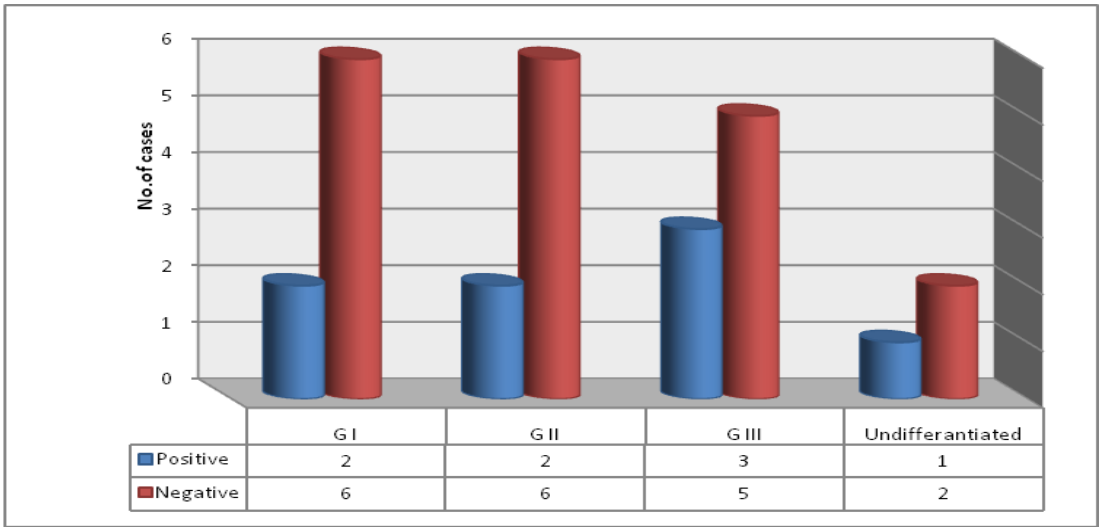


Figure (5): Proliferative phase- endometrium: Showing rounded glands, lined by columnar epithelium, and cellular stroma (H&E x200).

Figure (6): Secretory phase endometrium: Showing subnuclear vacuoles in glandular epithelium (H&E x200).

Figure (7): Simple endometrial hyperplasia. Showing endometrial glandular proliferation and dilatation of some glands. The glands are separated by dense endometrial stroma (H&E x200).

Figure (8): Complex endometrial hyperplasia. Showing marked glandular crowding resulting in a "back-to-back" appearance with little intervening stroma (H&E x 200).

Figure (9): Atypical endometrial hyperplasia. Showing glandular crowding and irregularity with nuclear atypia (H&E x400).

Figure (10): Endometrial carcinoma FIGO GI. Showing well-differentiated malignant glands lined by atypical cells with focal penetration of the basement membrane (H&E x200).

Figure (11): Endometrial carcinoma FIGO GII. Showing solid sheets of malignant cells with some glandular differentiation (H&E x200).

Figure (12): Endometrioid carcinoma FIGO GIII. The tumor mass formed mainly of solid sheets of malignant cells (H&E x200).

Figure (13): Endometrioid carcinoma FIGO GIII. Showing vascular invasion (H&E x200).

Figure (14): Undifferentiated endometrial carcinoma. The tumor mass formed of highly malignant epithelial cells (H&E x200).

Immunohistochemical results of Musashi-1 positive endometrial stem cells:

The immunohistochemical localization of the Musashi-1 positive cells was observed in 2 different locations:

-Stem cell in the stroma.

-Stem cell in the gland.

The cellular immunohistochemical distribution of the Musashi 1 protein was either:

- Cytoplasmic or
- Nuclear.

(1) Control (Proliferative and secretory endometrium):

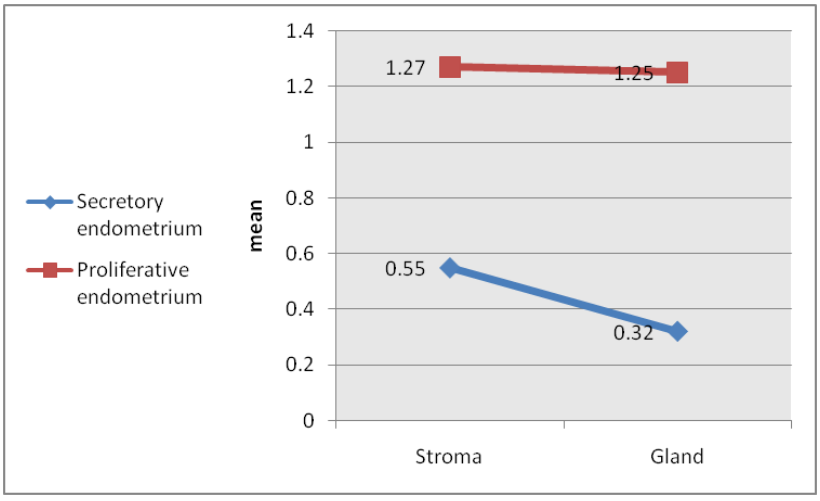
Among the four apparently normal endometrial tissues examined (2 proliferative and 2 secretory). Stem cells were found in both stroma and glands. The number of stromal Musashi-1 expressing stem cells per high power microscopic field (hpf) was increased about two fold during the proliferative phase of the menstrual cycle compared to the secretory phase. Also, the number of glandular Musashi-1 expressing stem cells /(hpf) was increased about four-fold during the proliferative phase of the menstrual cycle compared to the secretory phase **(Table 8 and Graph8).**

Table (8): The number of Musashi-1 expressing stem cells in proliferative & secretory endometrium:

	No. of cases	Musashi 1 positive stem cells			
		stroma		gland	
		Range	Mean	Range	Mean
Proliferative endometrium	**2**	**1.18-1.37**	**1.27**	**1.15-1.35**	**1.25**
Secretory endometrium	**2**	**0.53-0.57**	**0.55**	**0.21-0.43**	**0.32**

There was significant statistical correlation between number of stromal stem cells and the phase of endometrial cycle (either proliferative or secretory) ***(p<0.01),*** also there was significant statistical correlation between number of glandular stem cells and the phase of endometrial cycle ***(p<0.01*)**.

Graph (8): The number of Musashi-1 expressing stem cells in proliferative & secretory endometrium:



In endometrial stroma: both nuclear and diffuse cytoplasmic staining for Musashi-1 was detected. In proliferative endometrium, 87% of stromal stem cells showed diffuse cytoplasmic staining (**figure 16)** and 13% showed nuclear localization. In secretory endometrium, 86% of stromal stem cells

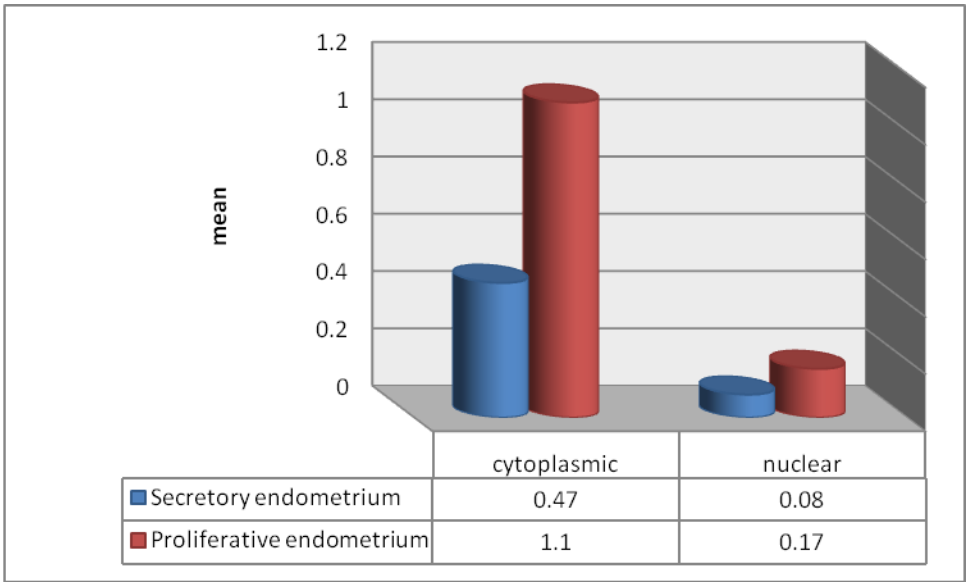
showed diffuse cytoplasmic staining (**figure 17)** and 14% showed nuclear localization ***(Table 9 and Graph9).***

Table (9): Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in proliferative and Secretory endometrium*:*

	No. of cases	Immunohistochemical localization of Musashi 1 positive stromal stem cells				
		Total mean	cytoplasmic		nuclear	
			mean	%	mean	%
Proliferative endometrium	**2**	**1.27**	**1.10**	**87**	**0.17**	**13**
Secretory endometrium	**2**	**0.55**	**0.47**	**86**	**0.08**	**14**

Statistically no significant correlation between the phase of endometrial cycle and cellular immunohistochemical distribution of Musashi-1 expression in stromal stem cells was found (**p>0.05).**

Graph (9): Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in proliferative and Secretory endometrium*:*



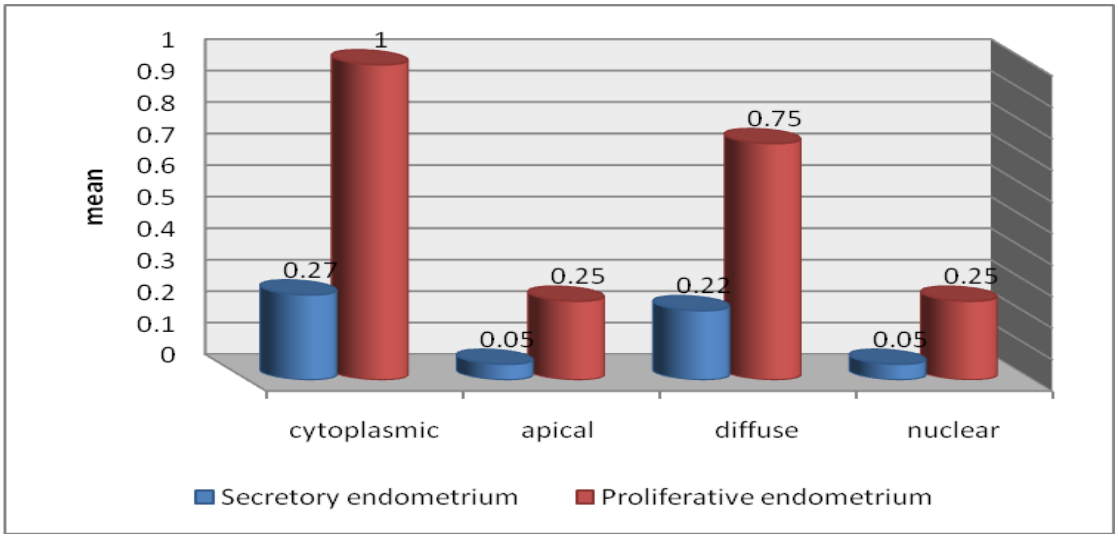
In endometrial glands: both nuclear and cytoplasmic staining for Musashi-1 was detected. Also, apical and diffuse cytoplasmic staining was detected in glandular stem cells. In proliferative endometrium, 80% of glandular stem cells showed cytoplasmic staining (75% of them were diffuse, 25% were apical) **(figure 15)** and 20% showed nuclear localization. In secretory endometrium: 83% of glandular stem cells showed cytoplasmic staining [80% of them were diffuse **(figure 18),** 20% were apical] and 17% showed nuclear localization ***(Table10 and Graph10).***

Table (10): Cellular immunohistochemical distribution of Musashi-1 expressing glandular stem cells in proliferative and secretory endometrium:

	No. of cases	Immunohistochemical localization of Musashi 1 positive glandular stem cells								
		Total mean	cytoplasmic		apical		diffuse		nuclear	
			mean	%	mean	%	mean	%	mean	%
Proliferative endometrium	**2**	**1.25**	**1**	**80**	**0.25**	**25**	**0.75**	**75**	**0.25**	**20**
Secretory endometrium	**2**	**0.32**	**0.27**	**83**	**0.05**	**20**	**0.22**	**80**	**0.05**	**17**

There was no significant statistical correlations between the phase of endometrial cycle and cellular immunohistochemical distribution of Musashi-1 expression in glandular stem cells (**p>0.05).**

Graph (10): Cellular immunohistochemical distribution of Musashi-1 expressing glandular stem cells in proliferative and Secretory endometrium:



(2) Endometrial hyperplasia:

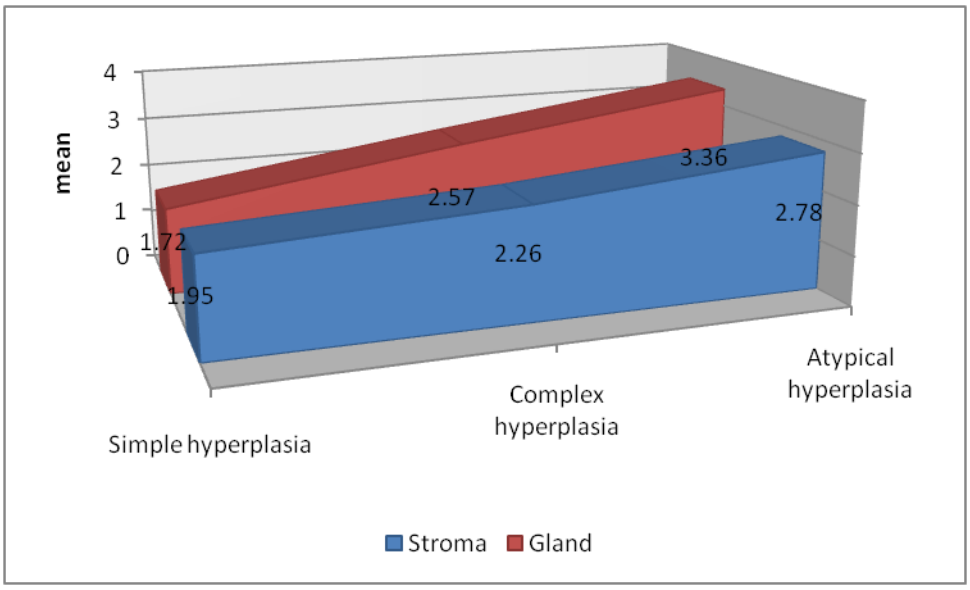
Stem cells were found in both stroma and glands. Regarding the type of endometrial hyperplasia: the number of stromal and glandular Musashi-1 expressing stem cells /hpf was increased progressively in the sequence simple endometrial hyperplasia to complex endometrial hyperplasia to atypical endometrial hyperplasia ***(Table11 and Graph11).***

Table (11): The number of Musashi-1 expressing stem cells in endometrial hyperplastic lesions:

Endometrial hyperplasia	No. of cases	Musashi 1 positive stem cells			
		stroma		gland	
		Range	Mean	Range	Mean
- Simple	5	1.52-2.72	1.95	1.22-2.62	1.72
- Complex	7	1.12-3.24	2.26	1.21-3.42	2.57
- Atypical	7	1.67-3.56	2.78	2.03-4.70	3.36
Total	19	1.12-3.65	2.33	1.21-4.70	2.55

There was significant statistical correlation between number of stromal stem cells and the type of endometrial hyperplasia ***(p<0.05)***. There was significant statistical correlation between number of glandular stem cells and the type of endometrial hyperplasia ***(p<0.01).***

Graph (11): The number of Musashi-1 expressing stem cells in endometrial hyperplastic lesions:



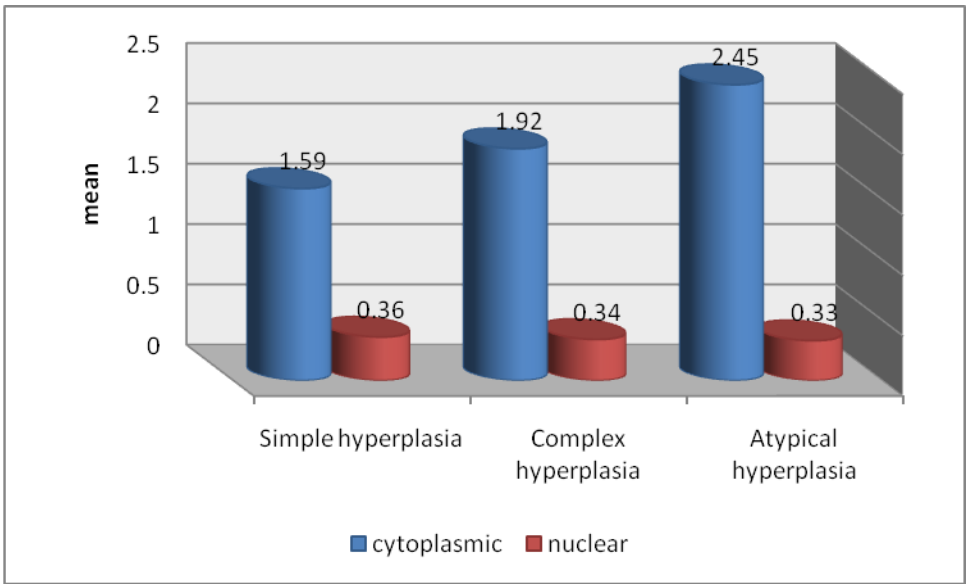
In endometrial stroma: both nuclear and diffuse cytoplasmic staining for Musashi-1 was detected. In simple endometrial hyperplasia: 82% of stromal stem cells showed diffuse cytoplasmic staining and 18% showed nuclear localization. In complex endometrial hyperplasia: 85% of stromal stem cells showed diffuse cytoplasmic staining and 15% showed nuclear localization. In atypical endometrial hyperplasia: 88% of stromal stem cells showed diffuse cytoplasmic staining **(figure 22)** and 12% showed nuclear localization ***(Table 12 and Graph12).***

Table (12): Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in different hyperplastic endometrial lesions:

Endometrial hyperplasia	No. of cases	Immunohistochemical localization of Musashi1 positive stromal stem cells				
		Total mean	cytoplasmic		nuclear	
			mean	%	mean	%
-simple	5	1.95	1.59	82	0.36	18
-complex	7	2.26	1.92	85	0.34	15
-atypical	7	2.78	2.45	88	0.33	12
Total	19	2.33	1.99	85	0.34	15

There was no significant statistical correlation between the type of endometrial hyperplasia and cellular immunohistochemical distribution of Musashi-1expression in stromal stem cells (**p>0.05).**

Graph (12):Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in different hyperplastic endometrial lesions:



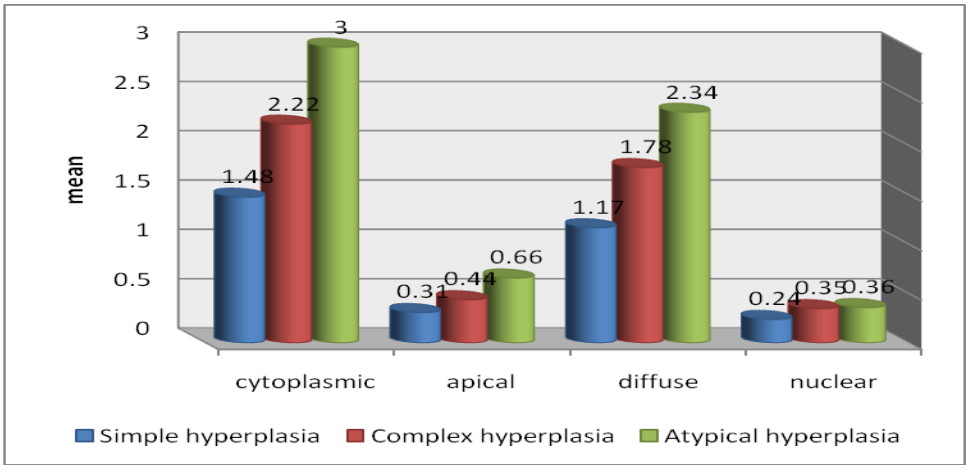
In endometrial glands: both nuclear and cytoplasmic staining for Musashi-1 was detected. Also, apical and diffuse cytoplasmic staining was detected in glandular stem cells. In simple endometrial hyperplasia: 86% of glandular stem cells showed cytoplasmic staining (79% of them were diffuse while 21% were apical**) (figure 19)** and 14% showed nuclear localization. In complex endometrial hyperplasia: 86% of glandular stem cells showed cytoplasmic staining (80% of them were diffuse while 20% were apical) **(figure 20)** and 14% showed nuclear localization. In atypical endometrial hyperplasia: 89% of glandular stem cells showed cytoplasmic staining (78% of them were diffuse while 22% were apical) **(figure 21)** and 11% showed nuclear localization ***(Table 13 and Graph13).***

Table (13):**Immunohistochemical distribution of Musashi-1expressing stromal stem cells in different hyperplastic endometrial lesions :**

Endometrial hyperplasia	No. of cases	Immunohistochemical localization of Musashi 1 positive glandular stem cells							
		Total mean	cytoplasmic		apical		diffuse		nuclear	
			mean	%	mean	%	mean	%	mean	%
-simple	5	1.72	1.48	86	0.31	21	1.17	79	0.24	14
-complex	7	2.57	2.22	86	0.44	20	1.78	80	0.35	14
-atypical	7	3.36	3.00	89	0.66	22	2.34	78	0.36	11
Total	19	2.55	2.23	87	0.47	20	1.76	80	0.32	13

There was no significant statistical correlation between the type of endometrial hyperplasia and cellular immunohistochemical distribution of Musashi-1expression in glandular stem cells (**p>0.05).**

Graph (13): Cellular immunohistochemical distribution of Musashi-1 expressing glandular stem cells in different hyperplastic endometrial lesions*:*



The number of stromal Musashi-1 expressing stem cells per (hpf) was increased about two fold in endometrial hyperplasia compared to the proliferative phase and increased about four-fold compared with secretory phase.

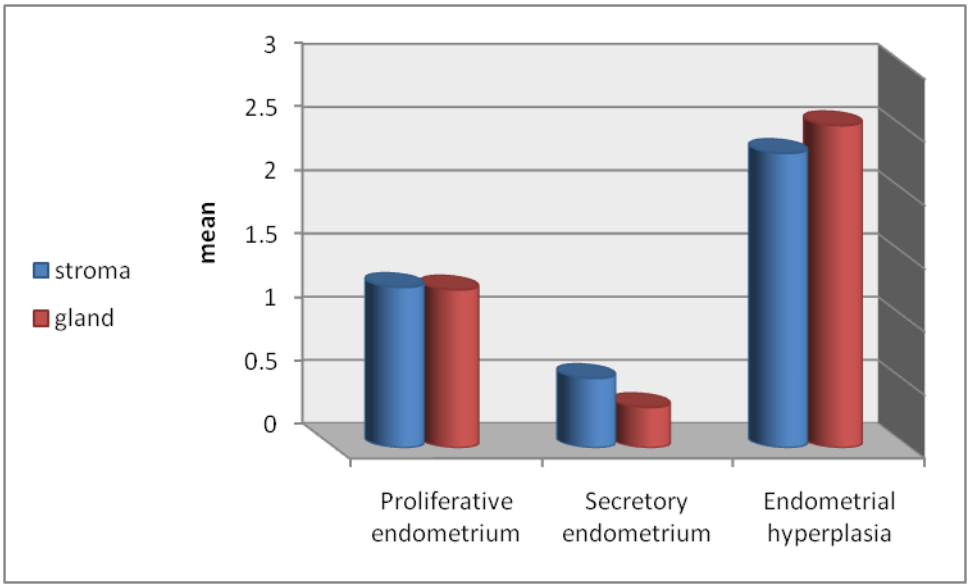
The number of glandular Musashi-1 expressing stem cells per (hpf) was also increased about two -fold in endometrial hyperplasia compared to the proliferative phase and increased about eight-fold compared with secretory phase ***(Table 14 and Graph 14).***

Table (14): The number of Musashi-1 expressing (stromal and glandular) stem cells in proliferative, secretory endometrium and endometrial hyperplastic lesions*:*

	No. of cases	Musashi 1 positive stem cells			
		stroma		gland	
		Range	Mean	Range	Mean
Proliferative endometrium	**2**	**1.18-1.37**	**1.27**	**1.15-1.35**	**1.25**
Secretory endometrium	**2**	**0.53-0.57**	**0.55**	**0.21-0.43**	**0.32**
Endometrial hyperplasia	**19**	**1.12-3.65**	**2.33**	**1.21-4.70**	**2.55**

There was significant statistical correlation between number of stem cells in the stroma and endometrial changes ***(p<0.01).*** There was significant statistical correlation between number of stem cells in the gland and endometrial changes ***(p<0.01).***

Graph (14): The number of Musashi-1 expressing (stromal and glandular) stem cells in proliferative, secretory endometrium and endometrial hyperplastic lesions*:*



(3) Endometrial carcinoma:

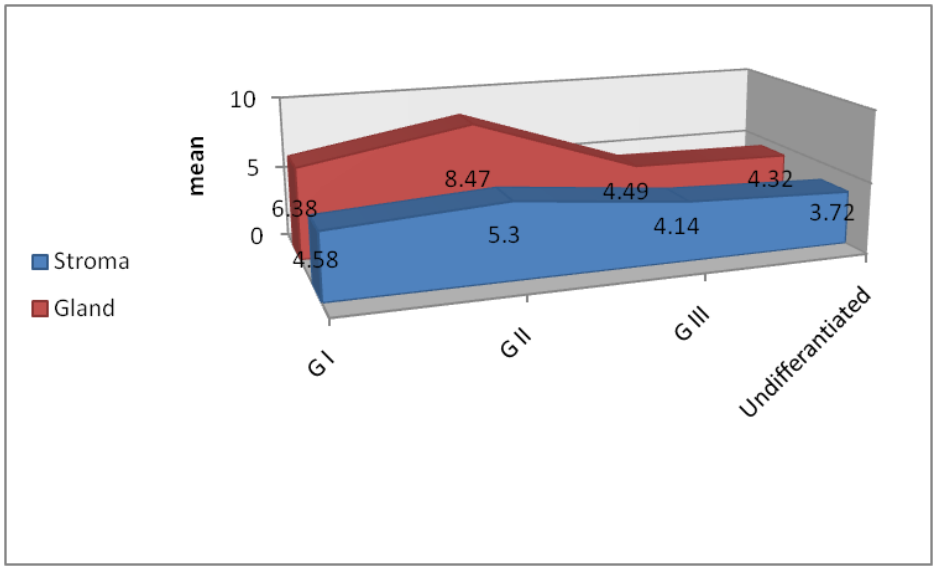
Stem cells were found in both stroma and glands. Regarding the grade of endometrial adenocarcinoma: the number of stromal and glandular Musashi-1 expressing stem cells per (hpf) was increased progressively in the sequence: undifferentiated endometrial adenocarcinoma < Grade III endometrial adenocarcinoma < Grade I endometrial adenocarcinoma < Grade II endometrial adenocarcinoma ***(Table15 and Graph15).***

Table (15): The number of Musashi-1 expressing stem cells in endometrial adenocarcinoma lesions:

Endometrial carcinoma	No. of cases	Musashi-1 positive stem cells			
		stroma		gland	
		Range	Mean	Range	Mean
- G I	8	3.72-5.62	4.58	5.21-7.72	6.38
- G II	8	3.43-6.51	5.30	7.22-9.81	8.47
- G III	8	3.56-4.64	4.14	3.63-5.92	4.49
Undifferentiated	3	3.10-4.54	3.72	3.22-5.62	4.32
Total	27	3.10-6.51	4.43	3.22-9.81	5.92

There was significant statistical correlation between number of stromal stem cells and grade of endometrial carcinoma ***(p<0.01)***. There was significant statistical correlation between the number of glandular stem cells and grade of endometrial carcinoma ***(p<0.01).***

Graph (15): The number of Musashi-1 expressing stem cells in endometrial adenocarcinoma lesions:



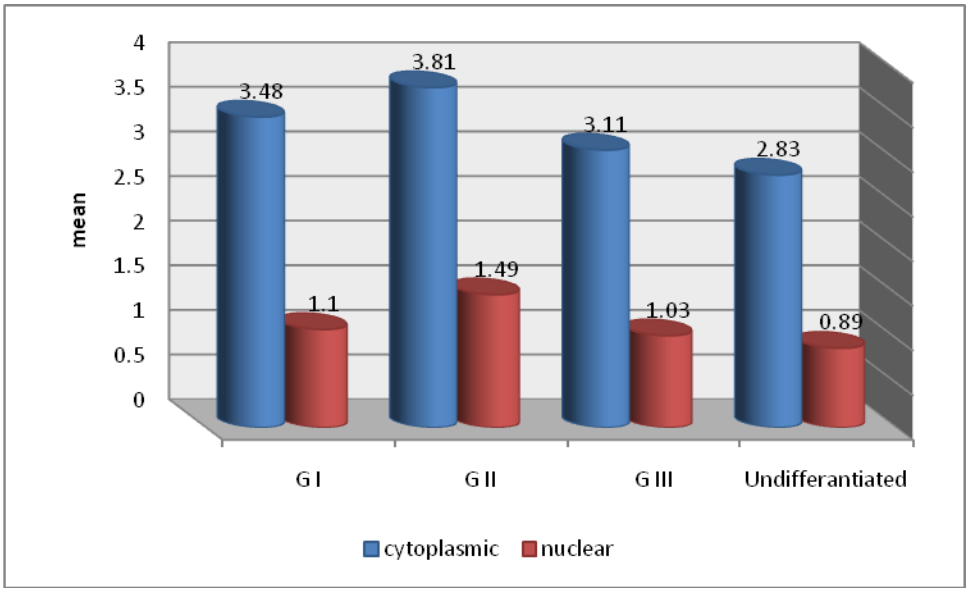
In endometrial stroma: both nuclear and diffuse cytoplasmic staining for Musashi-1 was detected. In grade I: 76% of stromal stem cells showed diffuse cytoplasmic staining and 24% showed nuclear localization. In grade II: 72% of stromal stem cells showed diffuse cytoplasmic staining and 28% showed nuclear localization. In grade III: 75% of stromal stem cells showed diffuse cytoplasmic staining **(figure 30)** and 25% showed nuclear localization . In undifferentiated carcinoma: 76% of stromal stem cells showed diffuse cytoplasmic staining and 24% showed nuclear localization ***(Table16 and Graph16).***

Table (16): Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in different endometrial adenocarcinoma lesions:

Endometrial carcinoma	No. of cases	Immunohistochemical localization of Musashi-1 positive stromal stem cells				
		Total Mean	cytoplasmic		nuclear	
			Mean	%	Mean	%
G I	8	4.58	3.48	76	1.10	24
G II	8	5.30	3.81	72	1.49	28
G III	8	4.14	3.11	75	1.03	25
undifferantiated	3	3.72	2.83	76	0.89	24
Total	27	4.43	3.31	75	1.12	25

There was no significant statistical correlation between the grade of endometrial carcinoma and cellular immunohistochemical distribution of Musashi-1expression in stromal stem cells (**p>0.05).**

Graph (16): Cellular immunohistochemical distribution of Musashi-1 expressing stromal stem cells in different grades endometrial adenocarcinoma:



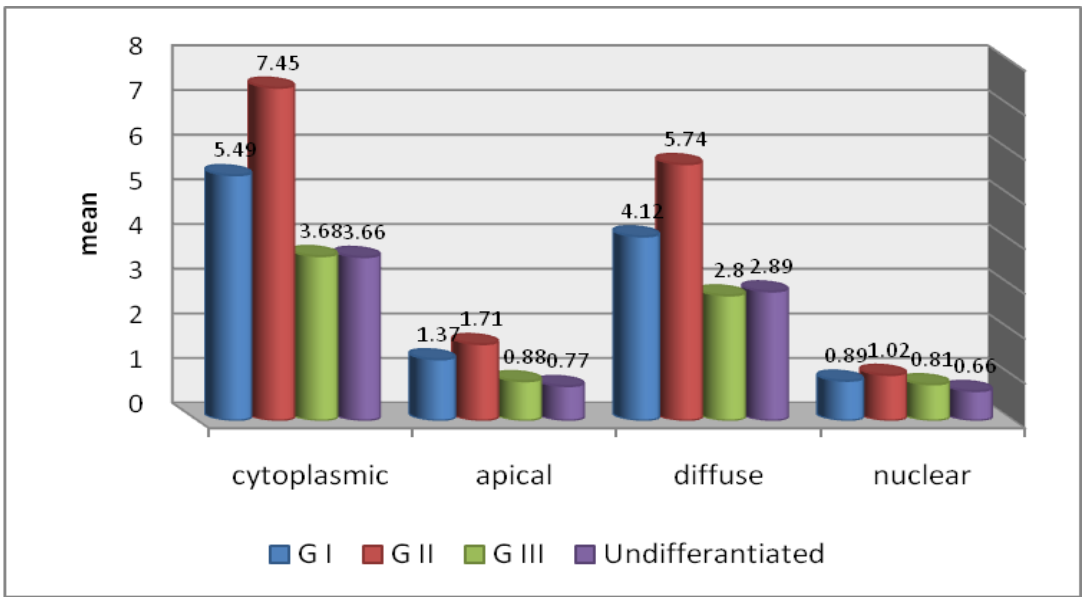
In endometrial glands: both nuclear and cytoplasmic staining for Musashi-1 was detected. Also, apical and diffuse cytoplasmic staining was detected in glandular stem cells. In grade I: 86% of glandular stem cells showed cytoplasmic staining (75% of them were diffuse while 25% were apical) **(figure 23)** and 14% showed nuclear localization **(figure 24).** In grade II: 88% of glandular stem cells showed cytoplasmic staining [77% of them were diffuse **(figure 27)** while 23% were apical **(figure 25)**] and 12% showed nuclear localization **(figure 26)**. In grade III: 82% of glandular stem cells showed cytoplasmic staining (76% of them were diffuse while 24% were apical) **(figure 28)** and 18% showed nuclear localization **(figure 29)**. In undifferentiated carcinoma: 85% of glandular stem cells showed cytoplasmic staining (79% of them were diffuse while 21% were apical) **(figure 31)** and 15% showed nuclear localization ***(Table17 and Graph17).***

Table (17): Cellular immunohistochemical distribution of Musashi-1 expressing glandular stem cells in different grades endometrial carcinoma *:*

Endometrial carcinoma	No. of cases	Immunohistochemical localization of Musashi 1 positive glandular stem cells								
		Total mean	cytoplasmic		Apical		diffuse		nuclear	
			mean	%	mean	%	mean	%	mean	%
G I	8	6.38	5.49	86	1.37	25	4.12	75	0.89	14
G II	8	8.47	7.45	88	1.71	23	5.74	77	1.02	12
G III	8	4.49	3.68	82	0.88	24	2.80	76	0.81	18
Undifferantiated	3	4.32	3.66	85	0.77	21	2.89	79	0.66	15
Total	27	5.92	4.16	85	1.18	23	2.98	77	1.76	15

There was no significant statistical correlation between the grade of endometrial carcinoma and immunohistochemical localization of Musashi-1 expression in glandular stem cells (**p>0.05).**

Graph (17):Cellular immunohistochemical distribution of Musashi-1 expressing glandular stem cells in different grade endometrial carcinoma:



Musashi-1 expressing stromal stem cells /hpf were significantly increased about eight-fold in endometrial adenocarcinoma compared to secretory endometrium, and increased about 3.5-fold in endometrial adenocarcinoma compared to proliferative endometrium.

Musashi-1 expressing glandular stem cells /hpf were significantly increased about 18.5-fold in endometrial adenocarcinoma compared to secretory endometrium, and increased about 4.7-fold in endometrial adenocarcinoma compared to proliferative endometrium.

Musashi-1 expressing stromal stem cells /hpf were increased about two-fold in endometrial adenocarcinoma compared to endometrial hyperplasia.

Musashi-1 expressing glandular stem cells /hpf were increased about 2.3-fold in endometrial adenocarcinoma compared to hyperplasia.

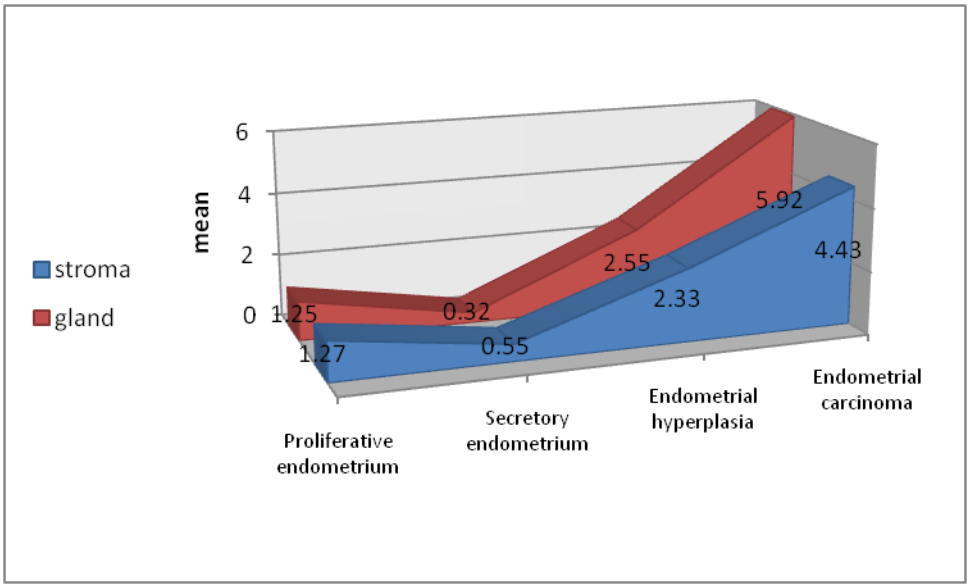
The number of both stromal and glandular Musashi-1 expressing stem cells per (hpf) was increased progressively in the sequence secretory endometrium < proliferative endometrium < endometrial hyperplasia < endometrial carcinoma ***(Table 18 and Graph18).***

Table (18): The number of Musashi -1 expressing (stromal and glandular) stem cells in proliferative, secretory endometrium, endometrial hyperplastic and carcinomatous lesions :

	No. of cases	Musashi 1 positive stem cells			
		Stroma		gland	
		Range	Mean	Range	Mean
Proliferative endometrium	**2**	**1.18-1.37**	**1.27**	**1.15-1.35**	**1.25**
Secretory endometrium	**2**	**0.53-0.57**	**0.55**	**0.21-0.43**	**0.32**
Endometrial hyperplasia	**19**	**1.12-3.65**	**2.33**	**1.21-4.70**	**2.55**
Endometrial carcinoma	**27**	**3.10-6.51**	**4.43**	**3.22-9.81**	**5.92**

There was a significant statistical correlation between number of stem cells in the stroma and endometrial changes ***(p<0.01***). There was significant statistical correlation between number of stem cells in the gland and endometrial changes ***(p<0.01)***.

Graph (18): The number of Musashi-1 expressing (stromal and glandular) stem cells in proliferative, secretory endometrium, endometrial hyperplastic and carcinomatous lesions :

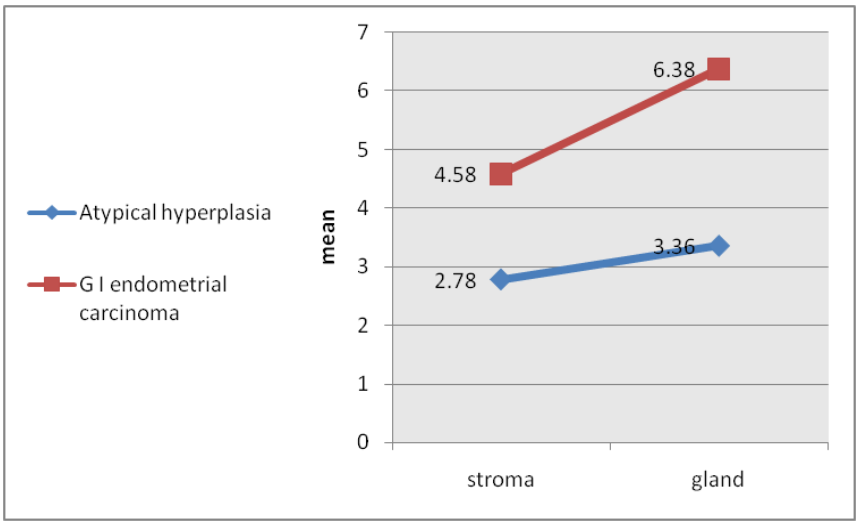


There was critical number of Musashi-1 expressing stem cells separating the precursor atypical endometrial hyperplasia from Grade I endometrial adenocarcinoma as in the latter Musashi 1 expressing stem cells was about double that expressed in the former in both stromal and glandular location ***(Table19 and Graph19).***

Table (19): The number of Musashi-1 expressing stem cells in atypical endometrial hyperplasia and Grade I endometrial adenocarcinoma:

	No. of cases	Musashi 1 positive stem cells			
		Stroma		gland	
		Range	Mean	Range	Mean
- Atypical endometrial hyperplasia	7	1.67-3.56	2.78	2.03-4.70	3.36
- Grade I endometrial adenocarcinoma	8	3.72-5.62	4.58	5.21-7.72	6.38

Graph (19): The number of Musashi-1 expressing stem cells in atypical endometrial hyperplasia and Grade I endometrial adenocarcinoma:



Correlation between number of stem cells expressed in endometrial carcinoma and the stage of the lesions:

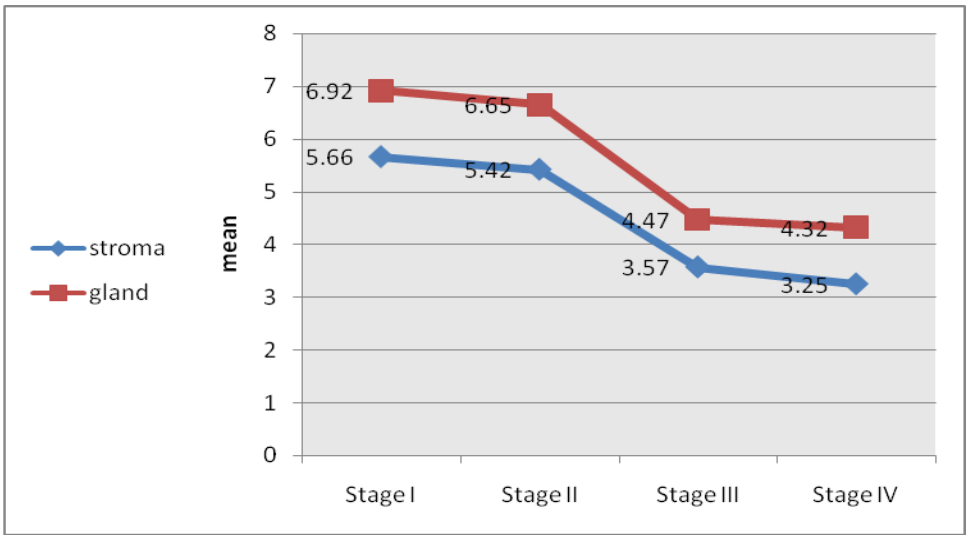
The number of stem cells in early stages of endometrial carcinoma was higher than that in late stages ***(Table 20 and Graph20).***

Table (20): Correlation between number of stem cells expressed in endometrial adenocarcinoma and the stage of this lesions*:*

Endometrial carcinoma	No. of cases	No. of Musashi-1 expressed stromal stem cells		No. of Musashi-1 expressed glandular stem cells	
		Range	Mean	Range	Mean
-Stage I	5	3.85-6.51	5.66	5.32-9.45	6.92
-Stage II	10	3.29-6.43	5.42	5.78-9.81	6.65
-Stage III	6	3.15-4.38	3.57	3.63-5.18	4.47
-Stage IV	6	3.10-4.37	3.25	3.22-5.82	4.32
Total	27	3.10-6.51	4.46	3.22-9.81	5.55

There was significant statistical inverse correlation between number of both stromal and glandular stem cells expressed in different stages of endometrial carcinoma ***(p<0.05).***

Graph (20): Correlation between number of stem cells expressed in endometrial carcinoma and the stage of this lesions:



Correlation between number of stem cells expressed in endometrial adenocarcinoma and the vascular invasion:

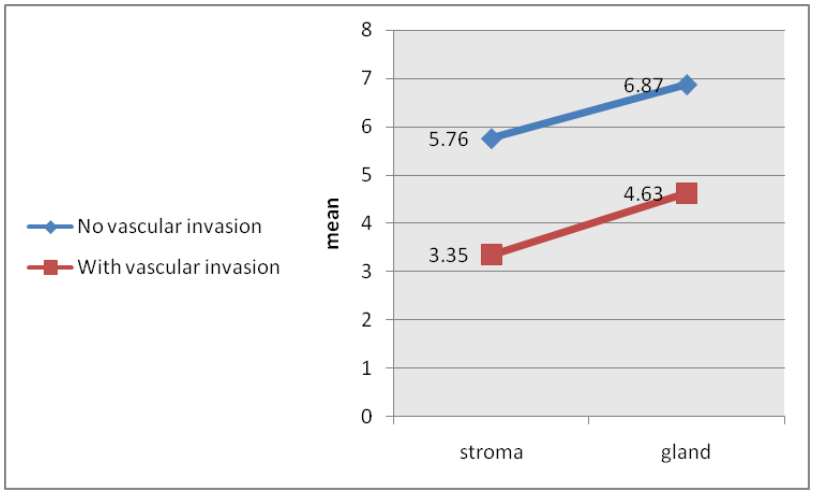
The number of stem cells in the lesions with vascular invasion was less than that in the lesions without vascular invasion ***(Table21 and Graph21).***

Table (21): Correlation between number of stem cells expressed in endometrial carcinoma and the vascular invasion:

Vascular invasion	No. of cases	No. of Musashi-1 expressed stromal stem cells		No. of Musashi-1 expressed glandular stem cells	
		Range	Mean	Range	Mean
- No vascular invasion	19	3.55-6.51	5.76	5.56-9.81	6.87
-With vascular invasion	8	3.10-4.37	3.35	3.22-5.64	4.63
Total	27	3.10-6.51	4.56	3.22-9.81	5.75

There was significant statistical inverse correlation between number of both stromal and glandular stem cells expressed in endometrial carcinoma and the presence of vascular invasion ***(p<0.05).***

Graph (21): Correlation between number of stem cells expressed in endometrial carcinoma and the vascular invasion:



Correlation between number of stem cells expressed in endometrial adenocarcinoma and the lymph node metastasis:

The number of stem cells in cases with lymph node metastasis was less than those without lymph node metastasis ***(Table 22 and Graph22).***

Table (22): Correlation between number of stem cells expressed in endometrial carcinoma and the lymph node metastasis:

Lymph node metastasis	No. of cases	No. of Musashi-1 expressed stromal stem cells		No. of Musashi-1 expressed glandular stem cells	
		Range	Mean	Range	Mean
- No Lymph node metastasis	21	3.77-6.51	5.74	5.87-9.81	6.98
-With Lymph node metastasis	6	3.10-4.54	3.32	3.22-5.92	4.62
Total	27	3.10-6.51	4.53	3.22-9.81	5.80

There was significant statistical inverse correlation between number of both stromal and glandular stem cells expressed in endometrial carcinoma and the lymph node metastasis ***(p<0.05).***

Graph (22): Correlation between numbers of stem cells expressed in endometrial carcinoma and the lymph node metastasis:

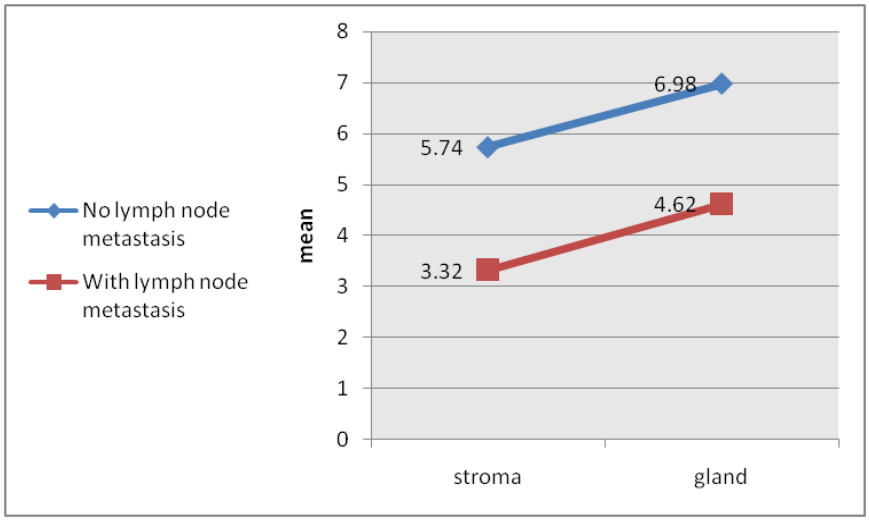


Figure (15): Musashi-1 expression in proliferative phase of endometrium. Showing apical staining of glandular lining epithelium (Streptavidin-Biotin x 1000 oil immersion lens).

Figure (16): Musashi-1 expression in proliferative phase of endometrium. Showing diffuse cytoplasmic staining of the stromal cells (Streptavidin-Biotin X1000 oil immersion lens).

Figure (17): Musashi-1 expression in secretory phase of endometrium. Showing diffuse cytoplasmic staining of stromal cells (Streptavidin-Biotin x400).

Figure (18): Musashi-1 expression in secretory phase of endometrium. Showing diffuse cytoplasmic staining of some glandular lining epithelium (Streptavidin-Biotin x1000 oil immersion lens).

Figure (19): Musashi-1 expression in simple endometrial hyperplasia. Showing apical cytoplasmic staining of glandular lining epithelium (Streptavidin-Biotin X1000 oil immersion lens).

Figure (20): Musashi-1 expression in complex endometrial hyperplasia. Showing diffuse cytoplasmic staining of glandular lining epithelium (Streptavidin-Biotin x400).

Figure (21): Musashi-1 expression in atypical endometrial hyperplasia. Showing apical cytoplasmic staining in glandular lining epithelium. (Streptavidin-Biotin x400).

Figure (22): Musashi-1 expression in atypical endometrial hyperplasia. Showing diffuse cytoplasmic staining of the stromal cells (Streptavidin-Biotin X1000 oil immersion lens).

Figure (23): Musashi-1 expression in endometrioid carcinoma FIGO GI. Showing apical and diffuse cytoplasmic staining of glandular lining epithelium (Streptavidin-Biotin x400).

Figure (24): Musashi-1 expression in endometrioid carcinoma FIGO GI. Showing diffuse cytoplasmic and nuclear staining of the glandular cells (Streptavidin-Biotin X1000 oil immersion lens).

Figure (25): Musashi-1 expression in endometrioid carcinoma FIGO GII. Showing apical cytoplasmic staining of the glandular cells (Streptavidin-Biotin x400).

Figure (26): Musashi-1 expression in endometrioid carcinoma FIGO GII. Showing nuclear staining of the glandular cells (Streptavidin-Biotin x400).

Figure (27): Musashi-1 expression in endometrioid carcinoma FIGO GII. Showing diffuse cytoplasmic staining of the glandular cells (Streptavidin-Biotin X1000 oil immersion lens).

Figure (28): Musashi-1 expression in endometrioid carcinoma FIGO GIII. Showing apical and diffuse cytoplasmic staining of glandular cells (Streptavidin-Biotin x400).

Figure (29): Musashi-1 expression in endometrioid carcinoma FIGO GIII. Showing nuclear and diffuse cytoplasmic staining of glandular cells (Streptavidin-Biotin x400).

Figure (30): Musashi-1 expression in endometrioid carcinoma FIGO GIII. Showing diffuse cytoplasmic staining of stromal cells (Streptavidin-Biotin X1000 oil immersion lens).

Figure (31): Musashi-1 expression in undifferentiated endometrial carcinoma. Showing diffuse cytoplasmic staining of glandular cells (Streptavidin-Biotin x400).