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Histopathological variations in endometrial biopsies

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Abstract

Objective: 1) To evaluate endometrial variations in women with abnormal uterine bleeding. 2) To study spectrum of patterns of endometrium in different age groups.

Materials and Methods: A retrospective study was undertaken to review the histopathological reports of all endometrial biopsies over a period of 4 years i.e. July 2010 to July 2014 in department of pathology of Veer Chandra Garhwali institute of medical sciences, Srikot, Srinagar, Garhwal, Uttarakhand. Data was entered in Microsoft excel and managed in statistical package for the social sciences (SPSS) version 16. Analysis was done in the form of percentages and represented as tables where necessary.

Results: A total of 200 patients were evaluated during the study period. The histopathological findings were categorized into functional and organic causes 150 (75%) cases revealed only functional pathology and a smaller group of cases 50 (25%)) showed definitive endometrial pathology. Maximum number of cases were observed in age group of 31-40 years with proliferative phase (60 cases, 40%) being the most common functional lesion and chronic endometritis (10 cases, 30.32%) the most common organic lesion, 3 cases (3.14%) of endometrial carcinoma were observed. Other endometrial patterns were secretory phase 20(12.57%), proliferative phase 62(38.99%), disordered proliferative endometrium 1(0.62%), 1 (0.62%), irregular shedding 1 (0.62%), chronic endometritis 3 (1.88%), pregnancy related 1 (0.62%), atrophic endometrium 6 (3.77%).

Conclusion: Endometrial biopsy is a safe, efficient and cost-effective means of evaluating the uterine endometrium. The functional endometrial changes account for the highest morphological patterns while malignant lesions account for the least common pattern of the endometrial biopsies evaluated for various gynaecological problems such as menstrual irregularities, dysfunctional uterine bleeding, infertility etc.

Keywords: endometrium, biopsy, Abnormal uterine bleeding

Introduction

Endometrium shows histological variations according to age of women, phase of her menstrual cycle and any other specific pathology like abnormal uterine bleeding which is one of the commonest condition in perimenopausal and postmenopausal women seeking gynaecological advise [1]. Endometrial sampling is effectively used as the first diagnostic step in abnormal uterine bleeding as it is a simple, cost-effective and appropriate method that provides accurate diagnostic yield [2]. Aim of our study was to evaluate variations in endometrium in various pathological conditions and also to know causes of abnormal endometrium in different age groups.

Objective

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Materials and Methods

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Results

A total of 200 patients were evaluated during the study period. 150 (75%) cases revealed only functional pathology and a smaller group of cases 50 (25%)) showed definitive endometrial pathology. Maximum number of cases were observed in age group of 31-40 years (table 1) with proliferative phase (60 cases, 40%) being the most common functional lesion and chronic endometritis (10 cases, 20%) the most common organic lesion.3 cases (6%) of endometrial carcinoma were observed. Other endometrial patterns were secretory phase 30(20%), disordered proliferative endometrium 18(12%), luteal phase defect 22(14.6%), chronic endometritis 10(20%), pregnancy related 6 (12%), atrophic endometrium 7 (14%).endometrial polyp8 (16%).

Table 1: Age distribution of some important functional and organic causes.

	21-30yrs	31-40yrs	41-50yrs	51-60yrs	>60yrs	Total
Proliferative endometrium	12	32	16	-	-	60
Secretory endometrium	11	07	12	-	-	30
Anovulatory endometrium	-	-	3	2		5
Disorderly proliferative	-	8	10	-	-	18
Hyperplasia			4	10	2	16
Endometrial polyp	-	-	3	5	-	8
Endometrial carcinoma	-	-	-	2	1	3

Table 2

Categorization of etiology of endometrial biopsies	
Functional etiology	150 cases (75%)
Organic etiology	50 cases (25%)

Table 3: categories of functional causes

Functional causes(physiological and pathological)	
Proliferative endometrium	60 (40%)
Secretory endometrium	30 (20%)
Disordered proliferative endometrium	18(12%)
Luteal phase defect	22(14.6%)
Pill endometrium	15(10%)
Anovulatory endometrium	5(3.3%)

Table 4: categories of organic causes

Organic causes	
Chronic endometritis	**10(20%)**
Simple hyperplasia	6(12%)
Complex hyperplasia without atypia	6(12%)
Complex hyperplasia with atypia	4(8%)
Endometrial polyp	8(1.6)
Atrophic endometrium	7(14%)
Pregnancy related	6(12%)
Endometrial carcinoma	3(6%)

Table 5: Comparision of various studies according to histopathological patterns.

Studies done	Total no. of cases	Histopathological pattern in DUB	
		Most common	least common
Khare *et al*. [13]	187	Proliferative phase	Endometritis
Dadhani *et al*. [18]	150	Proliferative phase	Irregular Proliferative phase
Nagarjuna *et al*. [17]	100	Proliferative endometrium	Irregular ripening & pill endometrium
Nanavati *et al*. [16]	410	Proliferative endometrium	Atrophic endometrium
Kariappa *et al*. [14]	205	Proliferative endometrium	Atrophic endometrium
Malukani *et al*. [15]	50	Proliferative endometrium	Irregular shedding
Patil R *et al*. [12]	190	Endometrial hyperplasia	Secretory hyperplasia
Verma *et al*. [11]	50	Disordered proliferation	Stromal, glandular breakdown
Present study	200	Proliferative endometrium	Endometrial carcinoma

Discussion

Woman comes with various gynaecological complains, most important of which is abnormal uterine bleeding. AUB can be due to functional disturbances referred to as dysfunctional uterine bleeding and organic pathologic conditions, such as chronic endometritis, endometrial polyps, endometrial hyperplasia either simple or complex or endometrial neoplasm. The commonest age group presenting with excessive bleeding in my study was 41–50 years. A similar incidence was reported by Mirza *et al* [3].

High proportion of the cases in study revealed normal physiological phases like proliferative, secretory and atrophic endometrium. Bleeding in the proliferative phase is due to Anovulatory cycles and in secretory phase is due to ovulatory dysfunctional uterine bleeding. Large number of cases revealed disordered proliferative pattern in my study. Disordered proliferative phase is considered to be one of the proliferative lesions in the endometrium, which includes carcinoma on one side and intervening stages of hyperplasia on the other side. It has been used in different ways as mentioned above and is therefore difficult to define. It denotes an endometrial appearance that is hyperplastic but without an increase in endometrial volume. It is also defined as proliferative phase endometrium which does not seem appropriate in the menstrual cycle, but is abnormal enough to be considered hyperplastic. The histological feature of disordered proliferative phase resembles features of simple hyperplasia, but the process is more suggestive of focal than diffuse. The exact mechanism of bleeding in the patients more than 50 years cannot be established, but it can be due to various anatomic vascular variations or due to local abnormal hemostatic mechanism. Due to the presence of thin walled veins, superficial to the expanding cystic glands makes the vessels more vulnerable to injury. In this study, as others

studies revealed that proliferative lesions like disordered proliferative pattern, endometrial hyperplasia and Anovulatory endometrium occur more commonly in the age group 41–50 years. The reason for increased incidence of dysfunctional uterine bleeding in this age group (41–50years) may be due to the fact that these patients are in their climacteric period. Due to shortening of the menstrual cycle and often becoming intermittently Anovulatory, ovarian follicles decrease in number so as the estradiol1++3+ level, menopausal women are prone to suffer from this condition Atrophic endometrium was seen predominantly in the 51–60 years age group. The incidence is slightly lower when compared with results shown by Meyer *et al* [3]. The exact cause of bleeding from the atrophic endometrium is not known. It is postulated to be due to anatomic vascular variations or local abnormal hemostatic mechanisms. Thin walled veins, superficial to the expanding cystic glands
make the vessel vulnerable to injury. The incidence of endometrial hyperplasia in this study was less as compared to others [4]. The possible explanation could be that most of patients here belong to lower socioeconomic status and the occurrence of risk factors like obesity, diabetes, increased intake of animal fat and sedentary life style is low. Another reason could be that most of these patients are being identified at a much earlier stage that is in the disordered proliferative phase. Identification of endometrial hyperplasia is important because they are thought to be precursors of endometrial carcinoma. The incidence of benign endometrial polyps in this study was high in 41–50 years age group. The exact aetiology of endometrial polyps is unknown. Estrogen and progesterone regulate the balance of proliferation and apoptosis in normal endometrium. In postmenopausal women, estrogen receptors are more prevalent in polyps than in adjacent normal endometrium.5 Genetic factors may explain polyp development, with reports identifying clusters of anomalies in chromosomes 6 and 12, which may alter the proliferative process, resulting in polyp formation in some women, Lower incidence of the endometrial polyps in the younger age group may be attributed to a possible spontaneous regression mechanism, which is characteristic of the cycling endometrium in reproductive age group [5].

In the present study incidence of carcinoma endometrium was more common in the 51–60 years age group. The result of this study was almost similar to data mentioned by Shukla *et al*. and Swati Bapurao Mune *et al*. in their study [6, 7]. A study done by Abdullahia *et al*. in Nigeria documented a lower incidence of endometrial cancer in their woman attributing it to the practice of early childbearing and multiparity [8]. Possibly, the same factors contributed to a lower incidence of carcinoma in our patients. High risk factors such as obesity, diabetes, increased intake of animal fat and especially sedentary life styles increases the incidence of endometrial hyperplasia. Endometrial hyperplasia could be a precursor of fertile soil for conversion into endometrial carcinoma that is why it is important to be identified by the pathologists. According to my study, the incidence of endometrial carcinoma had more prevalence in the age group ranging from 51-60 years of age, this was similar to study done by doriaswami *et al*. [9] In various studies, malignancy of the genital tract accounted for 30-50% of cases of bleeding in the postmenopausal period. Regarding the cases of endometritis observed in10 patients, which was quite more in number, this has to be taken in consideration because with the specific treatment, endometrium starts functioning normally [7]. Menstrual cycle disorders include a spectrum of conditions, from luteal phase deficiency (LPD) to oligoovulation to chronic anovulation. Researchers hypothesize that LPD is caused by impaired corpus luteum function, resulting in the lack of a fully mature secretory endometrium. Alternatively, LPD may reflect a deficiency in the uterine endometrial response to normal hormonal changes during the luteal phase [10]. Table 5 shows comparision of various studies done on histopathological variations in endometrial biopsy. Most of the studies are in concordance with our study.

Conclusion

The functional endometrial changes account for the highest morphological patterns while malignant lesions account for the least common pattern of the endometrial biopsies evaluated for various gynaecological problems such as menstrual irregularities, dysfunctional uterine bleeding, and infertilities. Endometrial biopsy is a safe, efficient and cost-effective means of evaluating the uterine endometrium.

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