Transvaginal ultrasound versus histology in endometrial hyperplasia

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Summary: The results have proved that the ultrasonographic transvaginal test in the recognition of endometrial hyperplasia shows very good diagnostic ability, even if it does not present a similar discriminative ability in differentiating the one from the other the various anatomo-pathological forms of hyperplasia.

Key words: Endometrial hyperplasia; Transvaginal ultrasound; Endometrium; Endometrial histology; Menopause.

INTRODUCTION

Endometrial hyperplasia is a proliferative disorder of the uterine mucous membrane, which affects both the glands and the stroma, due to an excessive estrogenic stimulus to which the endometrium reacts with a persistent proliferative phase and with glandular hyperplasia ([1]).

The most common cause of endometrial hyperplasia is represented by a defect of maturation of the oophor follicle which implies its abnormal persistence and transformation into a follicle cyst, which continues to produce estrogens and to stimulate the endometrium.

Other ovarian pathologies which may give rise to estrogenic hypersecretion and consequently to endometrial hyperplasia are the microcystic transformations of the ovaries and the ovarian tumours as those of the Granulose Cells or the tecomas ([1]).

Furthermore, substitutive estrogenic therapy may also cause endometrial hyperplasia ([1]).

Neoplastic evolution occurs more frequently in some kinds of hyperplasia.

Recent data from literature suggest a progressive risk of 1-3% for simple or adenoma hyperplasia and of 8-29% for hyperplasia with cytologic and/or structural atypia ([2]).

Nevertheless, the evolutionary process is slow and only develops after some years, with an average of about 5 years. Hyperplasia is more frequent, about 20%, especially in perimenopausal women, between 44 and 51 years of age.

The diagnosis of this pathologic condition is usually based on a cytologic (endocyte) or endometrial histological sample (Novak); however, research of non-invasive methodologies is still being carried out ([4, 5]).

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Clin. Exp. Obst. Gyn. - ISSN: 0390-6663
XXI, n. 4, 1994

Our study aims at proving the high medical reliability of transvaginal ecographic diagnosis in relation to the old morphologic criteria, in this pathology.

MATERIALS AND METHODS

One hundred and fifty seven patients were observed, of whom 69 menstruated regularly, between 42 and 51 years of age (average 46.5 years) who came to be checked by ecography because of menometrorrhagia (4.34% - 3 patients) and polymenorrhea (14.49% - 10 patients) and 88 patients in post-menopause (1-3 years after cessation of menstrual flux) aged between 49 and 53 years (average 51.5) in which ultrasonographic study was requested because of post-menopausal bleeding.

All the 157 patients underwent ecographic study first transabdominally, in order to check uterine dimensions (longitudinal diameter, antero-position diameter, transversal diameter) and to measure the endometrial thickness; afterwards, transvaginally, in order to give a more precise diagnosis of endometrial hyperplasia.

The ecographic observation was carried out with Aloka SSD 500 ecographer, with a 5.0 MHZ transvaginal probe and a 3.5 MHZ transabdominal probe.

For each patient a longitudinal scanning of the endometrium along the major uterine axis and a transversal one at the level of the tube angles taking its major diameter was given.

The endometrial thickness was measured by placing the calipers at the extreme points of the endometrial external lines, comprising both the strata of the mucous membrane [6].

The ultrasound check-up, among the normally menstruating women, took place on the 15th and 21st days of the menstrual period, when both the endometrial cytologic withdrawing (endocyte) and the endometrial biopsy (Novak) [5, 7] took place.

The cytologic material was fixed on the slide and thereafter sent to microscopic observation, after being coloured according to Papanicolau.

The histologic specimen which was taken with a Novak cannula after the ecography was kept in 70% alcohol, sections were included with paraffin sectioned at microtome and coloured with haematoxiline-eosine following the classic procedure.

RESULTS

Forty (29.93%) of the 157 patients revealed endometrial hyperplasia after histologic test. Of these, 28 (40.57%) were menstruating normally whereas 19 (27.53%) were in post-menopausal age.

The ecographic dimensions of the hyperplastic endometrial of the normally menstruating women varied, in a range respectively of 12 and 25 mm (average diameter 18.5) in the 15th day and 13 and 29 mm (average diameter 21) in the 21st day. In the other 19 postmenopausal patients the endometrial dimensions varied between 5 and 26 mm (average diameter 15.5).

In the remaining 98 patients having a morphologic aspect of normal endometrium, the endometrial thickness ascertained by the ecography varied in the 34 normally menstruating patients between 5 and 11 mm (average diameter 8) on the 15th day and between 7 and 13 mm (average diameter 10) in the 21st day, whereas in the 64 post-menopausal ones, it was between 3 and 9 mm (average diameter 6).

The ultrasonographic appearance of hyperplasia in the group of 29 normally menstruating women was histologically confirmed in 19 (67.85%) patients and presented as follows:

– homogeneously anechogenous (proliferative?) on the 15th day;

– irregularly hyperechogenous (secretive?) on the 21st day (Fig. 1*a*).

Whereas in the other 9 (32.24%) it was dishomogeneously hypoechogeneous on the 15th day and on the 21st day (dishormonal aspect) (Figs. 1*b* and 1*c*).

In the 19 patients with hyperplasia of the endometrium without flux, ecography showed a dishomogeneously hyperechogeneous picture with fine hypoechogenic areas (Fig. 1*d*).

CONCLUSIONS

Glandular hyperplasia of the endometrium represents an aspect of functional pathology, characterized by exaggeration of the normal proliferative phase.

In climateric age women, hyperplasia of the endometrial can have particular

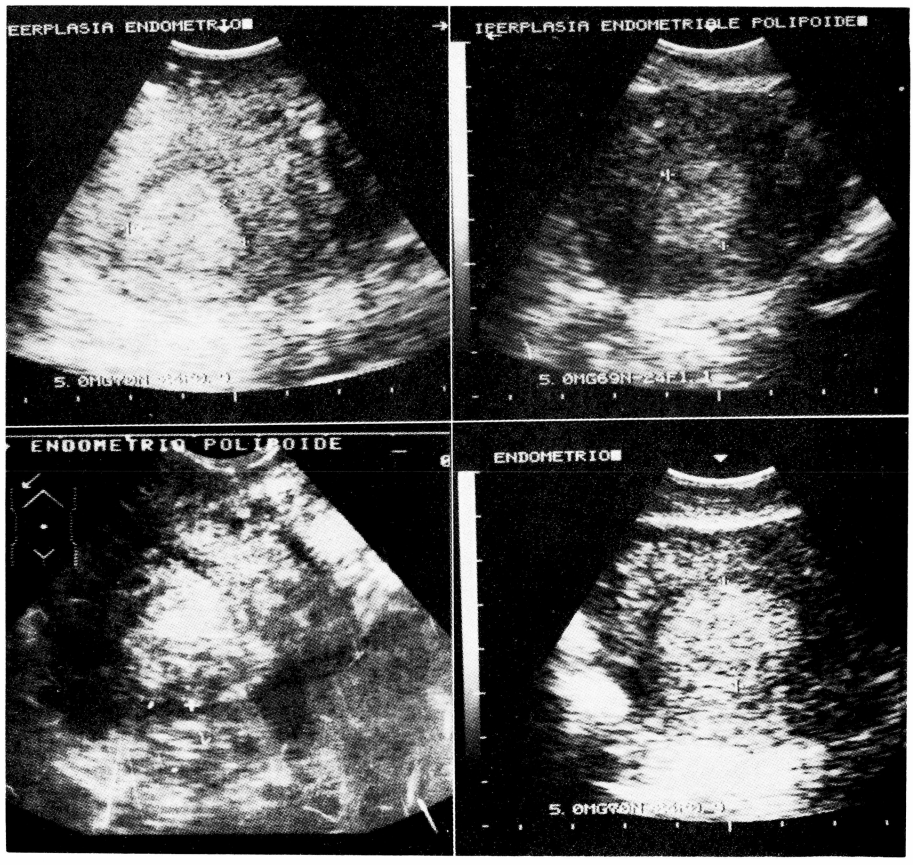

Fig. 1. — *a*) Ultrasound appearance irregularly hyperechogenous of endometrial hyperplasia (21st day); *b*) Ultrasound appearance of polipoid endometrial hyperplasia (dyshomogeneously hypoechogeneous) (15th day); *c*) Ultrasound appearance of dishormonal polypoid aspect (21st day); *d*) Ultrasound appearance of dishomogeneously hyperechogeneous picture with fine hypoechogenic areas.

aspects, characterized by a pluristratification of the epithelia, by epithelial output towards the stroma still contained in the basal membrane and by darker and more closely packed nuclei ([8]).

Until now, the only method which proved reliable for diagnosing endometrial hyperplasia was based on the histomorphologic observation of the endometrial tissue retrieved by biopsy. Today the introduction of a transvaginal proble in ecographic diagnostics has contributed to its explorative possibilities, by leading to real progress of non invasive diagnostic techniques which may lead in turn to the substitution of histo or cytomorphologic invasive investigation, with the non invasive ecomorphologic one.

In our study an endometrial thickness superior to 11 mm in the proliferative phase and 14 mm in the secretive phase, in normally menstruating patients, induced the suspicion of hyperplasia (Fig. 1*a*).

Above 14 mm thickness, each endometrium could surely be described as hyperplastic.

In the same way, in postmenopausal women, a 10 mm thickness or more of the endometrium suggested the diagnosis of hyperplasia and such a suspect became certainly when the endometrial thickness was over 12 mm (Fig. 1*d*).

We believe transvaginal ultrasonography to be a useful means of screening at the first level of diagnosis of endometrial hyperplasia, through the measuring of the endometrial thickness and the test of its ultrasonographic morphology, even without considering it as a survey that can substitute the histological test.

REFERENCES

1) Lanza G.: "Anatomia Patologica sistemica". 1985, Vol. II, Casa editrice Piccin.
2) Kurman R. J., Kaminiski P. F., Norbis M. J.: "The behaviour of endometrial hyperplasia. A long term study of untreated hyperplasia in 170 pts.". *Cancer*, 1985, *56*, 403.
3) Candiani G. B., Danesino V., Gastaldi A.: "Iperplasia endometriale". In: 'Clinica Ostetrica e Ginecologica'. Masson, 1992.
4) Forrest T. S., Elyaderami M. K., Muilenburg M. I. *et al.*: "Cyclic endometrial changes: us assessment with histologic correlation". *Radiology*, 1988, *167*, 233.
5) Fleischer A. C., Kalemeris C. G., Machin J. E., Entuman S. S., Everette J.: "Sonographic depiction of normal and abnormal endometrium with histopathologic correlation". *J. Ultrasound Med.*, 1986, *5*, 445-452.
6) Brandt T. D., Levy E. B., Grant T. H., Marnt E., Leland J.: "Endometrial Echo and its significance in female infertility". *Radiology*, 1985, *157*, 225-229.
7) Dallenbach-Hellneg G.: "Istopatologia dell'endometrio". 1986, Piccin Nuova Libreria Editore, Padova.
8) Pescetto, De Cecco, Pecorari, Ragni: "Iperplasia dell'endometrio". 1992, Società Editrice Universo, Roma.

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