ULTRASONOGRAPHY IN 1019 WOMEN WITH MENSTRUAL PROBLEMS

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Ultrasonography was performed in 1019 women with various menstrual problems. These included 35 girls (3.43%) with primary amenorrhoea, 94 women (9.22%) with secondary amenorrhoea, 154 (15.11%) with hypo— and oligo—menorrhoea, 488 (47.89%) women with heavy periods, 25 (2.45%) with post - menopausal bleeding and the rest with other problems. presented, and the role of ultrasound in menstrual bleeding and the rest with other problems. The ultrasound findings of these patients are disturbances is discussed (JPMA 38: 7 , 1988).

INTRODUCTION

Gray scale has facilitated the appreciation of textural contrast of parenchymal organs and of solid masses, and the mechanical sector scanner is of special value in pelvic scanning. Thus the uterus and the ovaries can be visualised, their size and morphology checked, and the possible origin and pathology of pelvic masses deduced[1-11]. Ultrasound scanning helps in the diagnosis and management of many menstrual disturbances. In primary anienorrhoea, the visualisation of the uterus and ovaries is reassuring, and may render unnecessary an invasive diagnostic procedure such as laparoscopy; in secondary amenorrhoea, the size of the uterus and ovaries can be measuçed, and pregnancy can be confirmed or excluded; in heavy menstrual blood loss, a fibroid, if present, could be seen, and a clue obtained from its position and size as to whether it could be the cause of heavy bleeding; in postmenopausal bleeding abnormalities of the endometrium and of the ovaries can be picked up, and may point the way for any surgical intervention that may be required. These facts about the utility of ultrasound in gynaecology are generally known, but no study has evaluated its role in menstrual problems. This paper, analysing the ultrasound findings of 1019 women with various menstrual disturbances, attempts to fill this gap.

MATERIAL AND METHODS

This study was conducted at the Ultrasound Clinic, Nazimabad, Karachi, and included 1019 consecutive women who were referred, between January 1984 and May 1985, for an ultrasound examination because of different menstrual disturbances. They were drawn from all the major hospitals and clinics in Karachi, as initially it was the only clinic in the city which offered an ultrasound diagnostic service. The ultrasound equipment used was Aloka SSD 280 (Aloka, Japan) with a linear array and mechanical sector probe, each of 3.5 mHz.

RESULTS

The reasons for the referral of the 1019 women are shown in Table I.

TABLE I
Menstrual Disturbances · 1019

	No.	%
Primary Amenorrhoea	35	3.43
Secondary Amenorrhoea	94	9.22
Polymenorrhoea	19	1.86
Menorrhagia	437	42.89
Polymenorrhagia	51	5.0
Hypo – and Oligo-menorrhoea	154	15.11
Metrorrhagia	67	6.58
Continuous/almost continuous vaginal bleeding for >2 weeks	67	6.58
Post –menopausal bleeding	25	2.45
Others	70	6.87
	1019	99.99

Thirty-five patients (3.43%) were referred because of primary amenorrhoea; their presenting symptoms are shown in Table II,

TABLE II
Primary Amenorrhoea.

Menstrual Disturbance	No.	%
Primary Amenorrhoea Alone	29	82.88
+ Dyspareunia/Apareunia	3	8.57
+ Hirsutism	1	2.85
Withdrawal Bleeding Once following Hormones	1	2.85
H/O Removal of Lt Adnexal Mass ADH to Bowel	1	2.85
Total	35	100.00

and their ages and ultrasound findings in Table III.

TABLE – III
Primary Amenorrhoea.

Age	Unmarried	Married	Normal UT Normal OV	Small Uterus Normal OV	Small Uterus Small OV	No Uterus Normal OV	Other	Total	%
13–15	6	1	5	1	1			7	20.0
16–20	11	2	3	5		5	–	13	37.14
21–25	3	5	2	3	1	2	–	8	22.86
26–30	2	3	2	1		1	1+	5	14.29
31 & Over	–	2	2					2	5.71
Total	22	13	14	10	2	8	1	35	99.99
Percentage			40.0	28.57	5.71	22.86	2.86		

+ M 14 yr, lap for lt adnexal mass adh to bowel – Ut small, cystic mass lt fx 5.6 x 5.3 cms

* I ovary visualised – 2 pts; I ovary cystic – 1 pt

13 of these patients were married. The ultrasound findings showed that 14 (40.0%) had a normal-sized uterus and ovaries (the criterion for a normal-sized uterus being a minimal length of 5.0 cms); of these, I girl had haematocolpos; in 8 (22.86%) patients, the uterus was not visualised, but the ovaries were normal; 12 had a uterus smaller than normal in size — of these, 10 had normal-sized ovaries and 2 had small ovaries (the criterion for a small ovary being a volume under 1.0 cml). One patient had a small uterus and a cystic ovary. Ninety four patients were sent because of secondary amenorrhoea; of these 29 (30.85%) were unmarried, the rest were married; the ages and parity of these patients are shown in

Table IV.

TABLE IV
Secondary Amenorrhoea · 94

Age	Unmarried	O	1–2	3–4	5 & Over	NR	Total	%
13–20	16*	4	–	–	–	–	20	21.28
21–30	8	18	9	5	2	–	42	44.68
31–40	5	5	8	3	8	–	29	30.85
41 & Over	–	–	–	2	1	–	3	3.19
Total	29	27	17	10	11	–	94	100.00
Percentage	30.85	28.72	18.09	10.64	11.7	–	100.00	

* I abd. mass ---- ov. tumour

Ultrasound findings are shown in Table V.

TABLE V
Secondary Amenorrhoea. 94

	Normal UT Normal OV	Small Uterus Normal OV	Small Uterus Small OV	Preg	Florid	Cystic OV	Other	Total	%
Secondary Amenorrhoea Alone:	45	3	2	3	2	5	3	63	67.02
With Hirsutism:	4	–	–	–	–	–	–	4	4.25
With Galactorrhoea:	1	–	–	–	–	–	–	1	1.06
With Large Uterus:	–	–	–	–	5	–	–	5	5.35
With ABD Mass:	–	–	–	1	–	–	2	3	3.19
With Adnexal Mass:	–	–	–	–	–	–	2	2	2.12
S. Amenorrhoea Since D&C:	2	–	–	–	–	–	1	3	3.19
S. Amenorrhoea Since Delivery:	2	–	–	–	–	–	–	2	2.12
S. Amenorrhoea Since ABD Surg:	1	–	–	–	–	–	–	1	1.06
Others:	5	2	2	–	–	–	1	10	10.64
Total:	60	5	4	4	7	5	9	94	100.00
%	63.83	5.32	4.25	4.25	7.45	5.32	9.57	99.99	

Four (4.25%) women were pregnant ;60 (63.83%) had a normal-sized uterus and ovaries; 9 had a uterus which was smaller in size than normal — of these, 4 had normal-sized ovaries and 5 had ovaries which were smaller than normal; 5(5.32%) patients had cystic ovaries, and 7 (7.45%) had a fibroid though, of course, this was not responsible for the amenorrhoea. One hundred and fifty four women were sent because of hypomenorrhoea and oligomenorrhoea. The reasons for their referral are mentioned in

TABLE VI
Hypo–and Oligomenorrhoea.

Menstrual Disturbance			No	%
Scanty Periods Alone			53	34.42
Long Cycles Alone			34	22.07
Scanty Periods + Long Cycles			14	9.09
Scanty Periods/Long Cycles + Other Problems			53	34.42
+	Infertility	9		
+	Infertility + Large UT	3		
+	Large UT	13		
+	Hirsutism	7		
+	ABD Mass	4		
+	Adnexal Mass	7		
	Misc.	10		

Table VI and their age and parity in Table VII.

TABLE VII
Hypo-and Oligomenorrhoea.

		PARITY						
Age	Unmarried	0	1–2	3–4	5 & More	NR	Total	%
13–20	20	10	3	–	–	–	33	21.43
21–30	16	58	19	5	3	–	71	46.11
31–40	7	8	11	10	6	1	43	27.92
41 & Over	–	2	–	2	3	–	7	4.54
Total	43	48	33	17	12	1	154	100.00
Percentage	29.92	31.17	21.43	11.04	7.79	0.65	100.00	

Ultrasound examination (Table VIII)

TABLE VIII
Hypo–and Oligomenorrhoea.

	NAD	Cystic Ovary	Cystic Ovary+ Other Abnor	Ov Cyst + Tumour	Preg.	Small Uterus Normal Ovary	Fib.	Others	Total	%
Scanty Periods Alone	42	4	1	2	1	–	–	3	53	34.42
Long Cycles Alone	29	–	–	–	–	4	–	1	34	22.07
Scanty Periods+ Long Cycles	10	1	–	–	–	1	–	2	14	9.09
Scanty Periods + Long Cycles + Other Problems	28	7	1	1	1	–	11	4	53	34.42
Total	109	12	2	3	2	5	11	10	154	100.00
Percentage	70.78	7.79	1.3	1.95	1.3	3.25	7.14	6.49	100.00	

revealed that 2 women were pregnant; 109 (70.78%) had a normal-sized uterus and ovaries, 5 had a small uterus, but normal-sized ovaries; 17 pateints had enlarged ovaries, of these 14 were cystic and 3 had an ovarian cyst or tumour; 11 (7.14%) patients were found to have fibroids. Of 488 women (47.88%) with heavy 161 patients (36.84%) were normal sonographiperiods 437 had menorrhagia and 51 had poly- cally; 175 patients(40.05%) had a fibroid (s); menorrhagia. Of the patients with menorrhagia, of these, 11 women had, in addition, some other 285 (65.22%) had menorrhagia alone; 116 pathology such as thick uterine walls, or cystic (26 .54%) had, in addition, an enlarged uterus or a ovaries. A total of 72 women (16.48%) had no palpable fibroid, and 36 (8.24%) had other detectable fibroid, but had a uterus which was problems in addition to menorrhagia. The age and more than 9.0 cms in length, or more than 4.5 parity of these patients are given in Table IX,

TABLE IX
Menorrhagia.

		PARITY							
Age	Un-married	0 No Ab	H/O Ab	1-2	3-4	5 & Over	NR	Total	%
12 – 16	21	6		2	–	–	1	30	6.86
21 – 30	25	16	7	25	28	12	–	113	25.86
31 – 40	12	7	3	27	36	91	1	177	39.5
41 & over	5	3	–	10	40	55	1	114	26.09
NR	–	1	–	–	1	1	–	3	0.69
Total	63	33	10	64	105	159	3	437	100.00
Percentage	14.42	7.55	2.29	14.64	24.03	36.38	0.69	100.00	

and ems in antero-posterior diameter, or both; 6 their ultrasound findings in Table X.

TABLE X
Menorrhagia.

	Fibroid	Fibroid + Other Path.	Thick Wall/ Bulky uterus	Ov. Cyst.	NAD	Others	Total	%
Menorrhagia Alone	107	5	29	1	128	15	285	65.22
Menorrhagia + Large Ut or Palpable Fib.	44	2	40	2	22	6	116	26.54
Others	13	4	3	3	11	2	36	8.24
Total	164	11	72	6	161	23	437	
Percentage	37.53	2.52	16.48	1.37	36.84	5.26	100.00	100.00
	40.05							

A total of patients (1.37%) had an ovarian cyst. Of 51 women with polymenorrhagia, 33 (64.71%) had polymenorrhagia alone and the rest had other problems in addition (Table XI).

TABLE XI
Polymenorrhagia.

	Fibroid	Thick Wall/ Bulky UT	Others	NAD	Total	%
Polymenorrhagia	9	6	3	15	33	64.71
+ Large Uterus	7	3	–	4	14	27.45
+ Infertility				1	1	1.96
+ Adnexal Mass			1		1	1.96
+ Abd. Mass	1			1	2	3.92
Total	17	9	4	21	51	100.00
Percentage	33.33	17.65	7.84	41.18	100.00	

Their ultrasound findings showed 21 (41. 18%) to have no abnormality which was detectable by ultrasound; 17 (33.33%) had uterine fibroids, 9 (17.65%) had a large uterus or thick uterine walls. Thus of a total of 488 women with heavy periods, 192 (39.34%) had a fibroid detectable by ultrasound; 81 (16.59%) had an enlarged uterus, with or without thick walls but no fibroid and 182 (37.29%) were sonographically normal. Of the patients who had a fibroid, there were 166 with a single fibroid, 14 with 2 fibroids and 12 with 3 fibroids or more. Of those with a single fibroid, 61 were subserous, 96 were intramural, 7 were submucous, and 2 were cervical. Those with 2 or more fibroids had at least 1 intramural fibroid, thus the number of women with intramural fibroids was 122 (i.e. 63.54% of total fibroids). Twenty-five women were referred because of post-menopausal bleeding. Their age, parity and ultrasound findings are shown in Table XII.

TABLE XII
Post – Menopausal Bleeding.

Age	0	1–2	3–4	5 & Over	NR	Total	Fibroid	Fibroid + Endometrial Hyperplasia	Bulky UT/ Thick walls	Cystic OV	OV Cyst/ Tumour	Large OV Morph. N	Preg	NAD
41-45	–	1	–	3	–	4	1	–	–	2	–	–	–	1
46-50	–	1	1	3	1	6	1	–	–	–	1	–	1	3
51-55	1	1	3	3	–	8	1	–	1	1	1	1	–	3
56 & Over	–	–	4	3	–	7	1	1	1	–	3	–	–	1
Total	1	3	8	12	1	25	4	1	2	3	5	1	1	8
%	4	12	32	48	4	100	16	4	8	12	20	4	4	32

Of these patients, 5 (20%) were found to have a fibroid (1 had in addition endometrial hyperplasia); 4 (16%) had cystic ovaries (confirmed by a repeat scan which showed normal-looking ovaries); one 48-years old women, 3 years post-menopausal was pregnant, and 8 (32%) had no abnormality which could be detected by ultrasound. This last group included 1 woman who had been diagnosed as cancer cervix stage I (histologically proven), but whose cervix, on ultrasound appeared quite normal.

FOLLOW-UP

An attempt was made to follow up the patients by contacting their referring physicians, by. contacting the patients at home by telephone (or their husbands at their offices), or by obtaining the required information at any subsequent visit of the patient. Of 35 patients with primary amenorrhoea, there were 8 in whom the uterus was not visualised by ultrasound; 3 of these subsequently had a diagnostic laparoscopy, which confirmed the ultrasound findings. Of patients with fibroids, 47 had hysterectomy, and 12 a myomectomy. Of those who had a hysterectomy, there were a few in whom there was discrepancy between the ultrasound findings and findings at operation — 2 patients had adenomyosis, and a further 2 had chocolate cysts of the ovaries, in addition to the diagnosed fibroid (s). One patient who had been diagnosed as having a fibroid turned out to have an adenomyoma; a patient diagnosed as fibroid with a cystic ovary, turned out to have a fibroid and a simple cyst of the ovary; I subserous fibroid was in fact a Brenner's tumour of the ovary. Of the 7 patients with a sucous fibroid, 2 had an exploration of the uterus — 1 did have a submucous fibroid, the other had retained products of conception.

DISCUSSION

In primary amenorrhoea, an important point which worries a gynaecologist is whether the uterus is present or not. The development of the uterus (from the Mulerian duct) is independent of the origin of the ovaries (from the germ cells which migrate from the region of the entoderm); thus abnormalities of the Mullerian duct may occur in the presence of normal ovaries. The presence of the uterus and ovaries, and an idea of their size can be obtained by a rectal examination but confirmation of the findings may be necessary. An ultrasound examination may provide the necessary information and laparoscopy could be reserved for those patients in whom an ultrasound examination is either inconclusive, or reveals an abnormality which needs confirmation. In our series of 35 girls with primary amenorrhoea, 14 had a normal-sized uterus and ovaries; in one of these there was haematocolpos. None of these patients had a laparoscopy. In 8 patients, the uterus was not visualised but the ovaries were normal-sized; 3 of these

had a laparoscopy which confirmed the ultrasound findings. In patients with secondary amenorrhoea and hypo-and oligomenorrhoea, the size of the uterus and ovaries can be checked with ultrasound, the adequacy or otherwise of the sex hormones gauged from the size of uterus, and pregnancy can be diagnosed. In our study, 60/94 (i.e. 63.83%) of patients with secondary amenorrhoea had a normal-sized uterus and ovaries; 4 (4.25%) were pregnant and 9 (9.57%) had a uterus smaller than normal in size; of these, 4 had normal-sized ovaries, and 5 had ovaries smaller than normal in size. 7 patients (7.45%) were found to have fibroids though this was obviously not the cause, of the amenorrhoea. Of patients with oligo-and hypo-menorrhoea, 109/154 (i.e. 70.78%) had a normal-sized uterus and ovaries; 5 (3 .25%) had a uterus smaller than normal in size, and normal-sized ovaries. 11 patients (7.14%) had a fIbroid. Heavy bleeding is another menstrual problem which prompts patients to seek the help of a gynaecologist. An important question is whether the cause is organic or hormonal. Among the organic causes are fibroids, adenomyosis, and endometrial polypi. The menstrual symptoms produced by a fibroid depend upon its position and size. A subserous fibroid, even if large, may be symptom-less; an intramural fibroid may cause heavy menstrual bleeding, either by enlarging the uterine cavity or by increasing the vascularity of the uterus; a submucous fibroid also causes heavy bleeding and dysmenorrhoea and, if the surface ulcerates, there may be intermenstrual bleeding as well. Fibroids are recognised on ultrasound by their texture; they are generally less echogenic than the myometrium but sometimes may be more echogenic; they usually produce attenuation of the sound waves. Calcified fibroids give rise to posterior accoustic shadowing. The ease with which the diagnosis of fibroids is made depends upon the number, size and position of the fibroids. Single fibroids may produce symmetrical enlargement of the uterus, but multiple fibroids may enlarge it irregularly. Large subserous and intramural fibroids are usually easy to diagnose as they increase the dimensions of the uterus and cause its outline to become irregular. Intramural fibroids may be seen to indent the midline echo. Fibroids on the anterior wall are easily visualised because of the interface provided by the full urinary bladder. This is especially true of subserous fibroids which may be seen even if they are as small as 0.7 ems. Fibroids on the posterior wall are more difficult to diagnose and may be missed if they are smaller than 2.0 cms in diameter. [12] Submucous fibroids may be suspected when an echogenic mass separates the endometrial surfaces but they are difficult to diagnose with confidence and need to be confirmed by hysteroscopy. In our series, there were 437 women with menorrhagia and 51 with polymenorrhagia. Of these 488 patients, 192,i.e. 39.34% had a fibroid; of. these, 3 1.77% were subserous, 63.54% were intramural, 3.65% were submucous and 1.04% were cervical. Subserous fibroids do not, as a rule, cause heavy bleeding and, therefore another cause for menorrhagia should be looked for. Intramural fibroids can and do cause heavy menstrual blood loss but it should be kept in mind that a fibroid is a common tumour and may co—exist with other pathology in the pelvis which may, in fact, be the actual cause of heavy bleeding. These include submucous or endometrial polypi and even be endometrial carcinoma. Alternatively, the bleeding may be functional in nature despite the presence of the fibroid. Thus the search for a cause should continue until a satis factory answer has been obtained. Submucous fibroids are treacherous as they are difficult to diagnose either clinically or by ultrasound; they may be missed on exploration of the uterus; they are best confirmed by hysteroscopy. Adenomyosis may be suspected on ultrasound by the thickness of the walls of the uterus, and a honeycomb appearance of the myometrium. This latter finding may be difficult to visualise. In our series, 8 1/488 patients with heavy bleeding had a bulky uterus or thick walls or both. It is probable that many of these had adenomyosis. The ultrasound appearance of a adenomyoma and a fibroid may be similar, and the difference may not become apparent even at operation until the incision of the false capsule of the ‘fibroid’ reveals Its absence; in our series, a patient diagnosed as having an intramural fibroid, was found at operation to have adenomyoma. Of patients with post-menopausal bleeding, 5 had an ovarian cyst/tumour, 3 had cystic ovaries. One patient who, on ultrasound examination showed no abnormality, had been diagnosed as cancer cervix stage 1. This serves to underline the fact that a negative ultiasound examination does not always exclude disease. Ultrasound examination was thus found to be of value in

primary and secondary amenorrh9ea, heavy menstrual blood loss, and post-menopausal bleeding. However, it should be remembered that an abnormality detected by ultrasound may not be the cause of the menstrual problem and many lesions may not be visualised by ultrasound. Clinical judgement, backed by clinical examination and ultrasonography. helps in the better diagnosis and management of a patient with menstrual disturbances.

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