PELVIC MRI AS ALTERNATIVE TO PELVIC US FOR THE DIAGNOSIS OF PCOS IN OVERWEIGHT AND OBESE ADOLESCENT GIRLS.

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Background: Polycystic ovary syndrome (PCOS) is a common reproductive endocrinopathy in women of childbearing age, affecting 5 to 10% women in this age group. Its suggestive cardinal features are hyperandrogenism, ovulatory dysfunction and/or polycystic ovary appearance. The diagnostic gold standard tool is pelvic ultrasound (PUS) which may be limited in overweight and obese adolescent girls.

Objective and hypotheses: To evaluate the contribution of pelvic MRI in diagnosis of PCOS in overweight and obese adolescent girls.

Method: Six adolescent girls seen for signs and symptoms of hyperandrogenism and menstrual irregularity were biochemically screened (LH, FSH, testosterone, S-DHEA, delta-4 androstenedione, 17(OH) P, SHBG, TSH, free T4 and lipid profile, fasting blood sugar and HOMA IR and HOMA-B). Each had PUS and/or pelvic MRI (PMRI) performed.
Other causes of hyperandrogenism were excluded.

Imaging: PUS performed with trans-abdominal transducer (Acuson© scanner, using 3.5 - 7.5 MHz transducer; PMRI performed with phased array coil of 1.5 T Siemens MRI scanner, with T1 and T2-weighted axial and coronal images. The diagnosis of PCOS defined according to Rotterdam PCOS consensus Workshop (Hum Reprod 2004; 19: 41-7).

Results: Six adolescent girls (mean age 14.93 ± 1.52 years, mean BMI 31.64 ± 5.75 Kg/m², mean age at menarche 11.82 ± 1.27 years), with menstrual irregularities, acanthosis nigricans (5/6), acne, hirsutism (Table 1), and biochemical characteristics of PCOS (high plasma androgens, insulin resistance, glucose/insulin ratio <4.5, decreased SHBG) were identified, results are summerized in Table 2. PUS was not contributive, but PMRI showed typical aspect with well delineated peripheral ovarian cysts, increased ovarian volume (Mean Right ovarian volume was 13.23   1.96 ml and mean Left ovarian volume of 13.66   1.26 ml) and increased stroma (Images). The mean follicle number per ovary was 19 ± 3.23 follicles.

Table 1: Patients ' Clinial characteristics and presenting signs & symptoms.

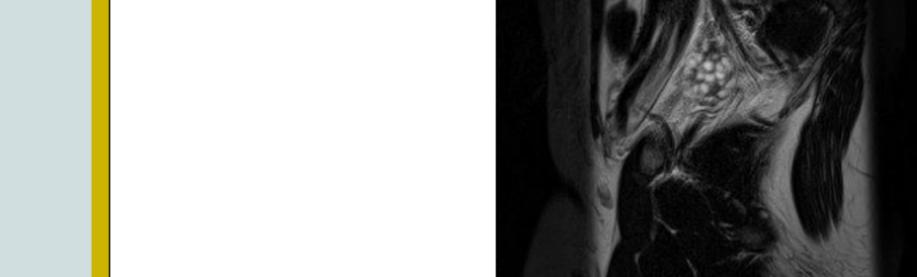|	Age (yrs)	BMI (kg/m²)	Age at menarche (yrs)	Menses Irregularities	Acanthosis nigricans	Acne/greasy hair	Hirsutism	Ferriman G. score
1	15.10	41.23	12.6	yes	yes	no	no	0.0
2	12.10	40.0	10.0	yes	yes	yes	yes	13.0
3	14.9	25.66	13.0	yes	no	yes	no	2.0
4	15.0	31.49	12.5	yes	yes	no	no	0.0
5	16.0	35.84	11.0	yes	yes	yes	yes	11.0
6	16.5	33.4	NS	yes	yes	yes	yes	9.0

Table 2: Patients' Biochemical Results

	T (nmol/l)	SDHEA (ng/ml)	Δ4-A (nmol/l)	Insulin (basal) (pmol/l)	OGTT	AMH (pmol/l)	SHBG (nmol/l)	HOMA-IR	HOMA-B	GLUC/INSULIN
1	2.3	NA	11.2	138	NP	NP	NP	3.92	290	8.44
2	3.1	5347	NA	86	NP	NP	NP	NA	NA	NA
3	3.0	10378	16.06	49	NP	NP	NP	NA	NA	13.3
4	3.3	4930	7.50	358	H2h : 1.58g/l	N	NP	10.17	1187.73	1.51
5	2.84	1732	12.5	157	H2h :1.59	NP	15.0	4.22	704.61	NA
6	1.50	4122	11.1	356	NP	18.3	11.0	11.10	800	NP

[0.11 – 0.57] [651 – 3680] [2.12 – 12.2] [2.6 – 24.9]   [N < 50] [32 – 128] [N = 1] [N < 100] [N < 4.5]

NA: not available ; NP: not performed.
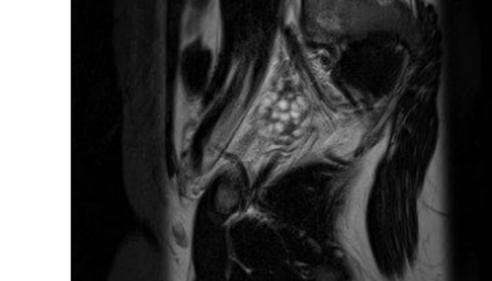
Conclusion: PUS remains gold standard diagnostic tool for PCOS, its limitations in overweight and obese girls are real and should be known. Endo-vaginal transducer cannot, however, be utilized in young virgin girls. PMRI is a useful and accurate alternative, allowing greater delineation of structural components of the ovary and better appreciation of its volume or structural alterations.
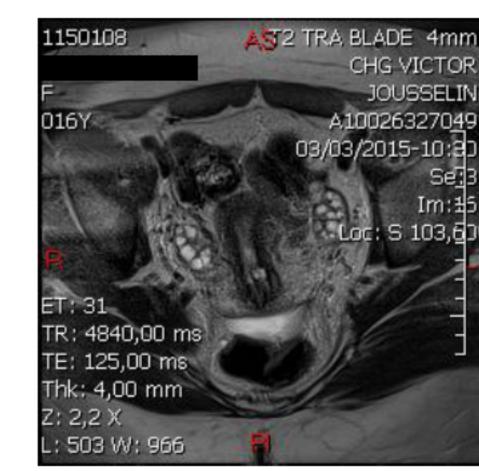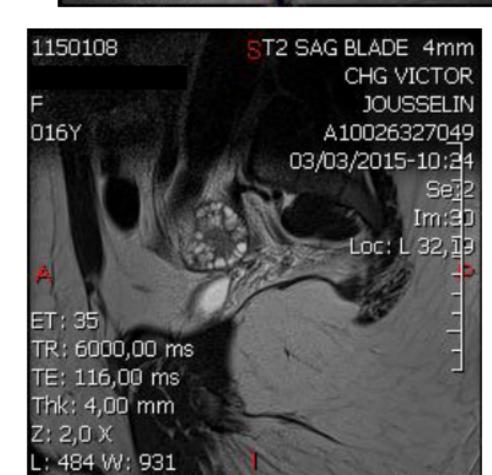
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Gonads
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