



# Impact of adenomyosis in endometriotic patients undergoing in vitro fertilization: comparison of ovulation induction protocols

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# Introduction

## Clinical markers

- ✓ Age



## Serum markers

- ✓ FSH, E<sub>2</sub>
- ✓ AMH



## US markers

- ✓ Ovarian volume
- ✓ Antral follicle count



➤ appropriate protocol for controlled ovarian hyperstimulation (COH)

- presence of benign gynecological pathologies infertility-related
- ✓ Ovulatory dysfunction
  - ✓ Uterine malformations
  - ✓ Tubal pathologies
  - ✓ Endometriosis
  - ✓ Adenomyosis

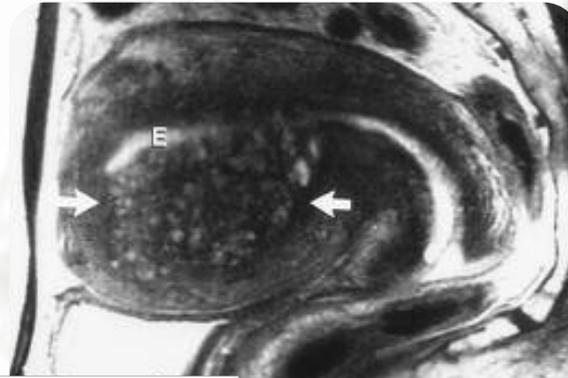


# Introduction

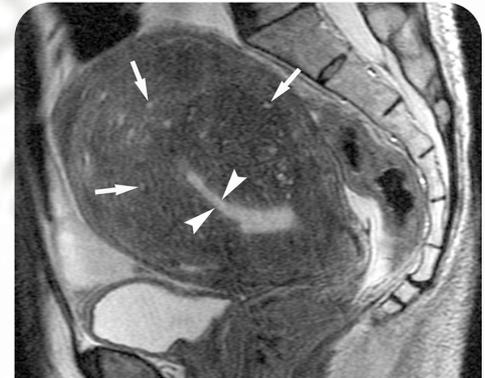
## *Magnetic Resonance Imaging*



*Diffuse adenomyosis*



*Nodular adenomyosis*

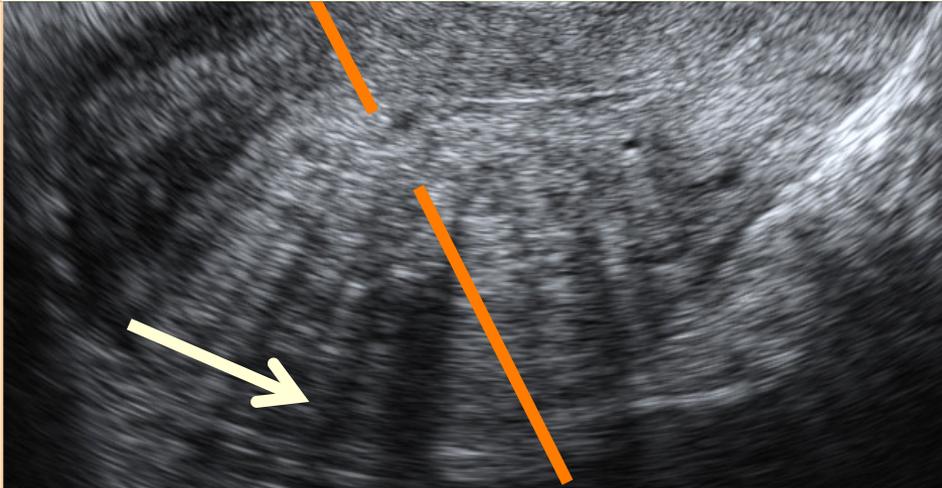


***Sensitivity 77.5%***

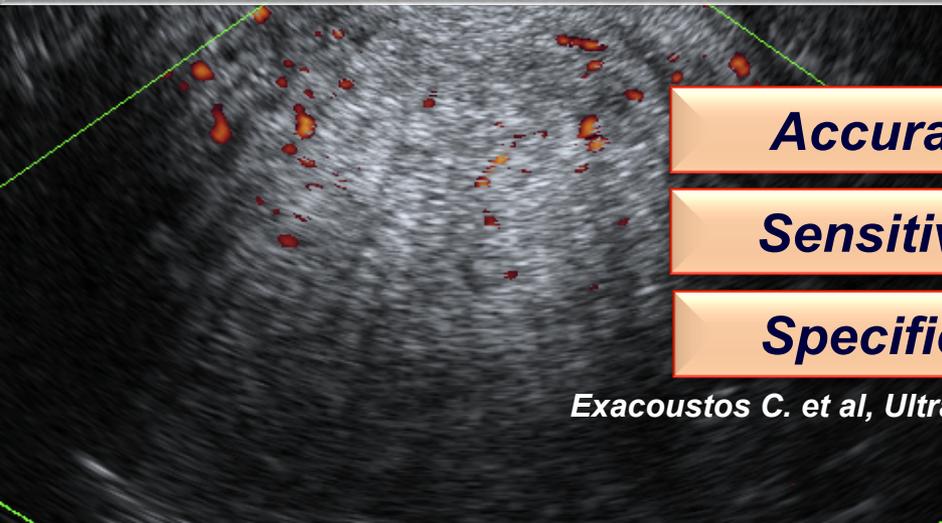
***Specificity 92.5%***

# Introduction

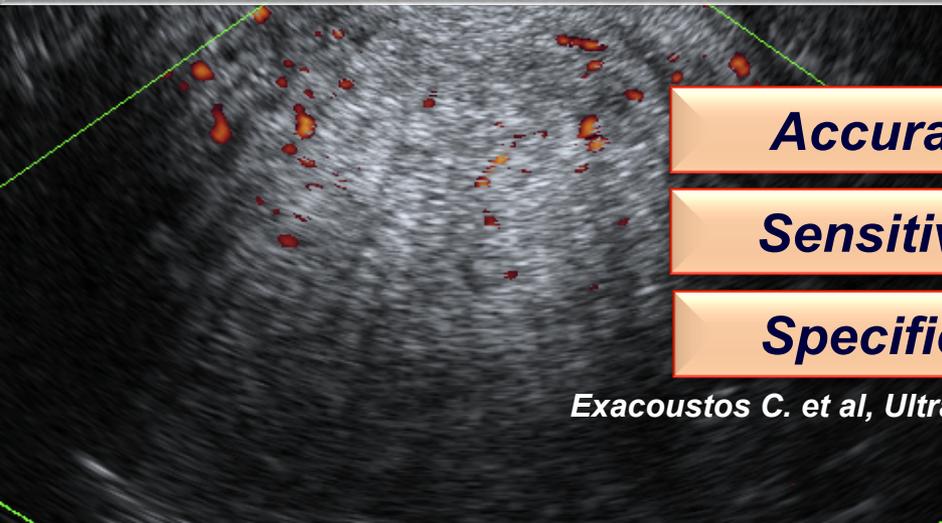
## 1. Myometrial hypoechoic linear striation



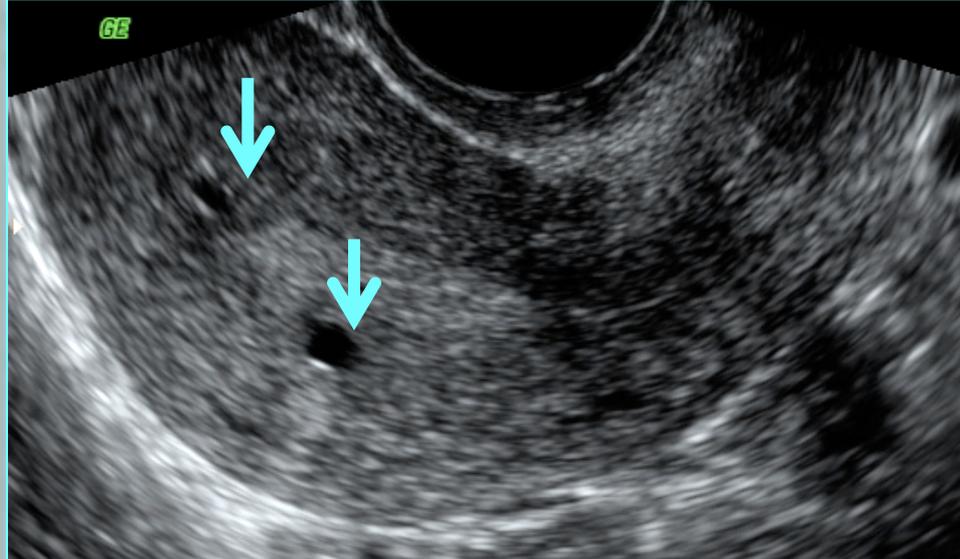
## 2. Enlarged uterus and asymmetric thickening of myometrium



## 4. Irregular vessels distribution



GE



## 3. Myometrial cystic area

**Accuracy 89%**

**Sensitivity 91%**

**Specificity 88%**

*Exacoustos C. et al, Ultrasound Obstetr Gynecol 2011*

**JZ diff  $\geq 4\text{mm}$**   
**JZ max  $\geq 8\text{mm}$**   
**JZ infiltration**

Mix70/30  
51mm  
3D Static

# Aim of the study

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- ✓ To compare the *in vitro* fertilization outcomes of long gonadotropin- releasing hormone agonist (GnRH-a) and GnRH antagonists (GnRH-ant) protocols in endometriotic patients in presence of adenomyosis.

# Methods

June 2005

February 2013

720 IVF-ICSI cycles

- ✓ Diagnosis of endometriosis was histologically proven in women who had past surgery
- ✓ or based on published imaging criteria using transvaginal US and MRI.

204 IVF cycles

SUP n=8  
OMA n=29  
DIE n=167

Adenomyosis

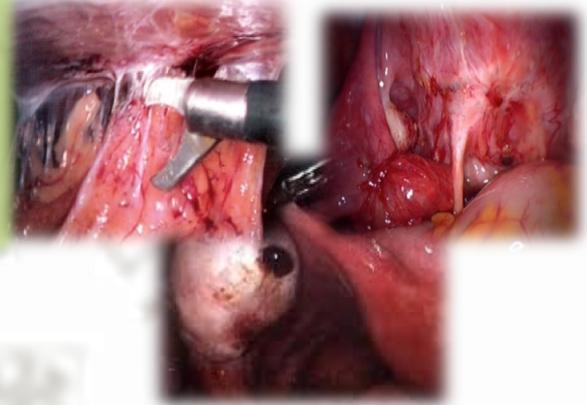
GnRH analogue (n=117) OR GnRH antagonist (n=87)

# Results

Medical history (Study Group n=204)			
	Agonist group (n=117)	Antagonist group (n=87)	<i>P value</i>
<b>Age (years)</b>	33.8 ± 4.1	33.4 ± 3.6	0.385
<b>BMI</b>	22.8 ± 3.5	22.9 ± 3.4	1.000
<b>Previous endometriosis surgery</b>	79 (67.5)	66 (75.9)	0.194
<b>Previous endometrioma surgery</b>	51 (43.6)	37 (42.5)	0.880
<b>Gravidity</b>	0.6 ± 0.9	0.5 ± 1.0	0.205
<b>Parity</b>	0.2 ± 0.5	0.2 ± 0.5	0.635
<b>Infertility (n, %)</b>			0.380
<i>Primary</i>	78 (66.7)	63 (72.4)	
<i>Secondary</i>	39 (33.3)	24 (27.6)	
<b>Length of infertility (years)</b>	4.3 ± 2.5	4.4 ± 2.3	0.546
<b>Associated male infertility (n,%)</b>	18 (15.4)	14 (16.1)	0.891
<b>Associated tubal factor (n,%)</b>	14 (12.0)	15 (17.2)	0.286
<b>Ovarian reserve</b>			
<i>Day 3 FSH (UI/L)</i>	6.5 ± 1.9	7.2 ± 5.1	0.479
<i>Day 3 LH (UI/L)</i>	4.9 ± 2.7	4.9 ± 2.7	0.896
<i>Day 3 Estradiol (pg/mL)</i>	47.5 ± 33.5	49.9 ± 29.9	0.249
<i>AFC</i>	11.4 ± 6.6	11.9 ± 6.1	0.472
<i>AMH (ng/mL)</i>	3.1 ± 2.1	3.5 ± 2.5	0.270

# Results

	GnRH agonist group (n=117)	GnRH antagonist group (n=87)	P value
<b>Endometriosis phenotype (n,%)</b>			0.807
<i>SUP</i>	5 (4.3)	3 (3.4)	
<i>OMA</i>	18 (15.4)	11 (12.6)	
<i>DIE</i>	94 (80.3)	73 (83.9)	



	GnRH agonist group (n=117)	GnRH antagonist group (n=87)	<i>P value</i>
<b>Total dose of injected gonadotrophin (UI)</b>	2439.8 ± 801.7	2516.1 ± 635.5	0.223
<b>N. of oocytes retrieved</b>	6.2 ± 5.5	5.3 ± 4.0	0.430
<b>N. embryos obtained</b>	3.7 ± 3.5	3.4 ± 3.1	0.732
<b>N. of embryos transfer</b>	1.3 ± 0.9	1.3 ± 1.0	0.849
<b>Implantation rate</b>	0.2 ± 0.3	0.2 ± 0.3	0.951
<b>Pregnancy rate / cycle (n,%)</b>	31/117 (26.5)	22/87 (25.3)	0.846
<b>Miscarriage (n,%)</b>	7/31 (22.6)	11/22 (50.0)	<0.05

# Conclusions

**The existence of associated adenomyosis in endometriosis affected women has a negative impact on the outcome of IVF cycles**



**Prolonged downregulation with GnRH-a prior to ovarian stimulation for IVF is beneficial to achieving pregnancy**

- 1. improve the uterine microenvironment**
- 2. can reduce miscarriage rate following IVF in infertile endometriotic patients with adenomyosis**