Suivi biologique de l'assistance médicale à la procréation

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Suivi biologique de l'AMP

- Le Bilan
  - Reserve ovarienne FSH, E2, AMH
  - Androgènes: 17 OHP
  - LH
  - Progesterone
  - Autres: TSH, PRL

- *Le Traitement*
  - *SMO-IIU*
  - *FIV*
  - *TEC*

Disclosure

- Nothing to disclose…... except….

Infertilité du couple

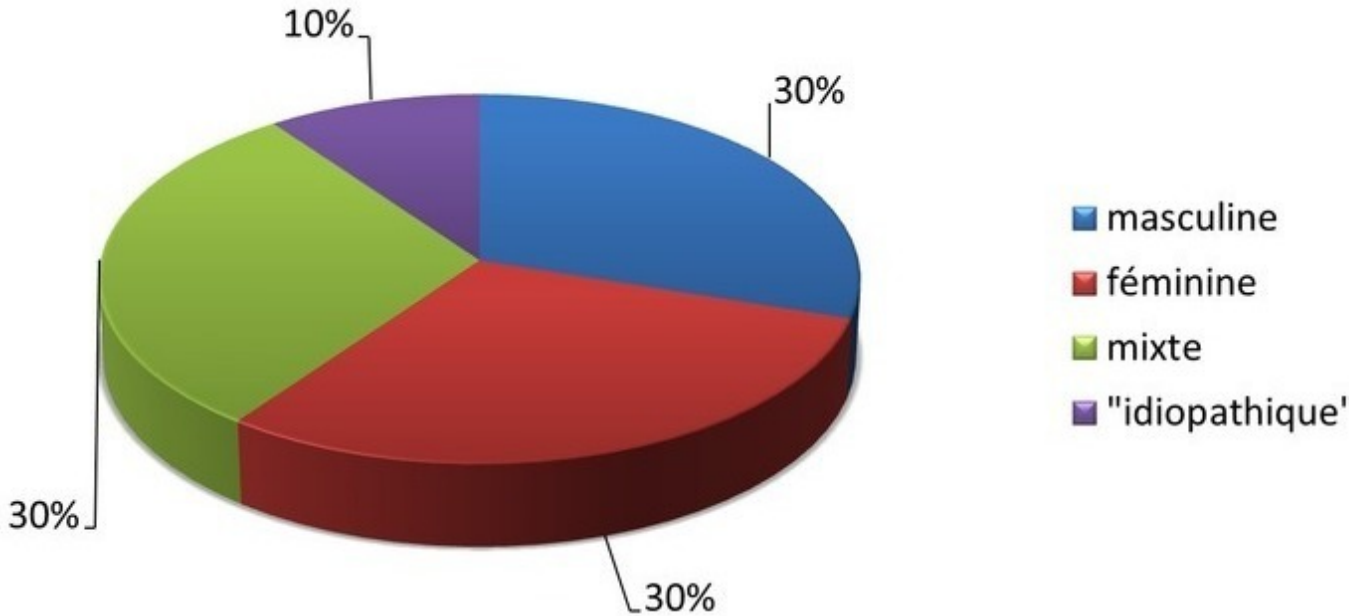
- Problème majeur de santé publique

- France : 1/8 couple va consulter pour « infertilité »

- Augmentation de l'incidence de l'infertilité du couple multifactorielle :
  - *Les tabous sont tombés ! On en parle…*
  - *Âge de désir d'enfant plus tardif*
  - *Facteurs environnementaux*
  - *Evolution de l'espèce humaine ?*

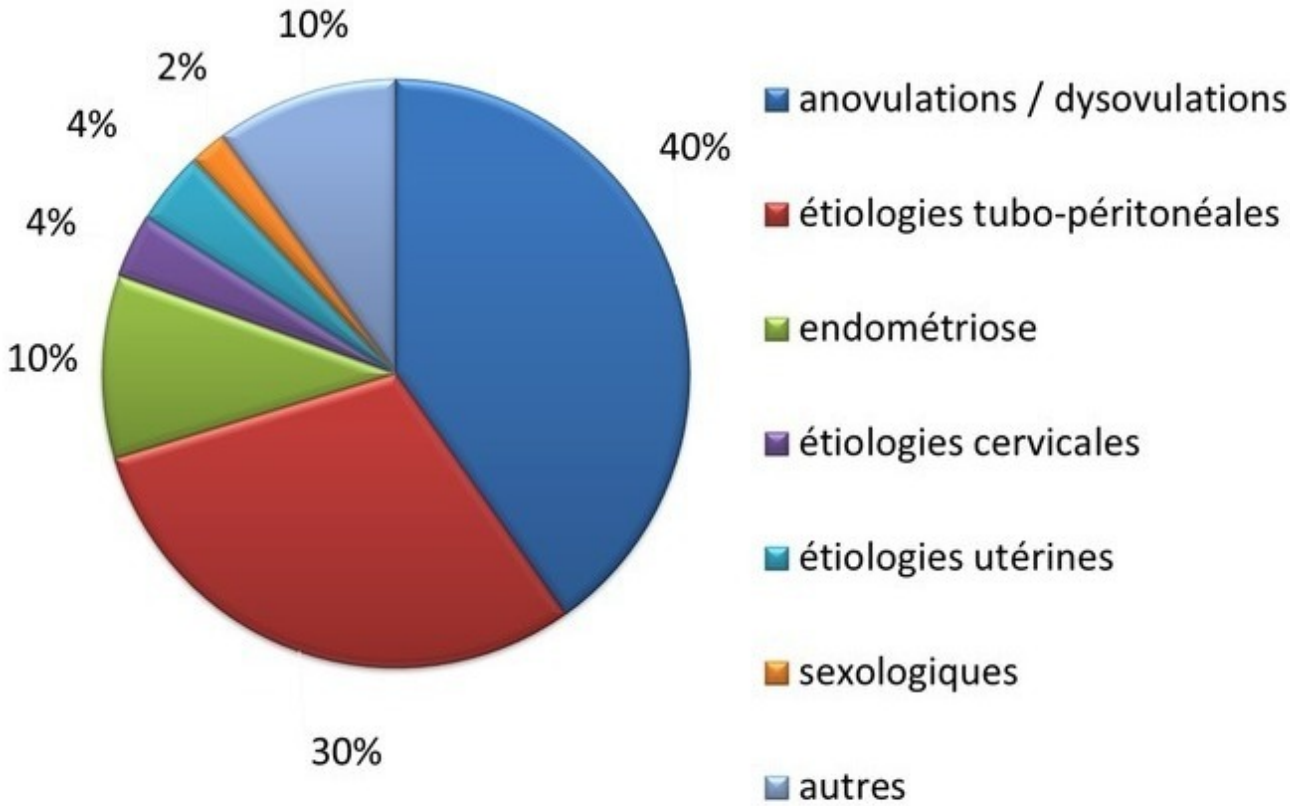
Étiologies d'infertilité du couple

répartition des étiologies d'infertilité du couple



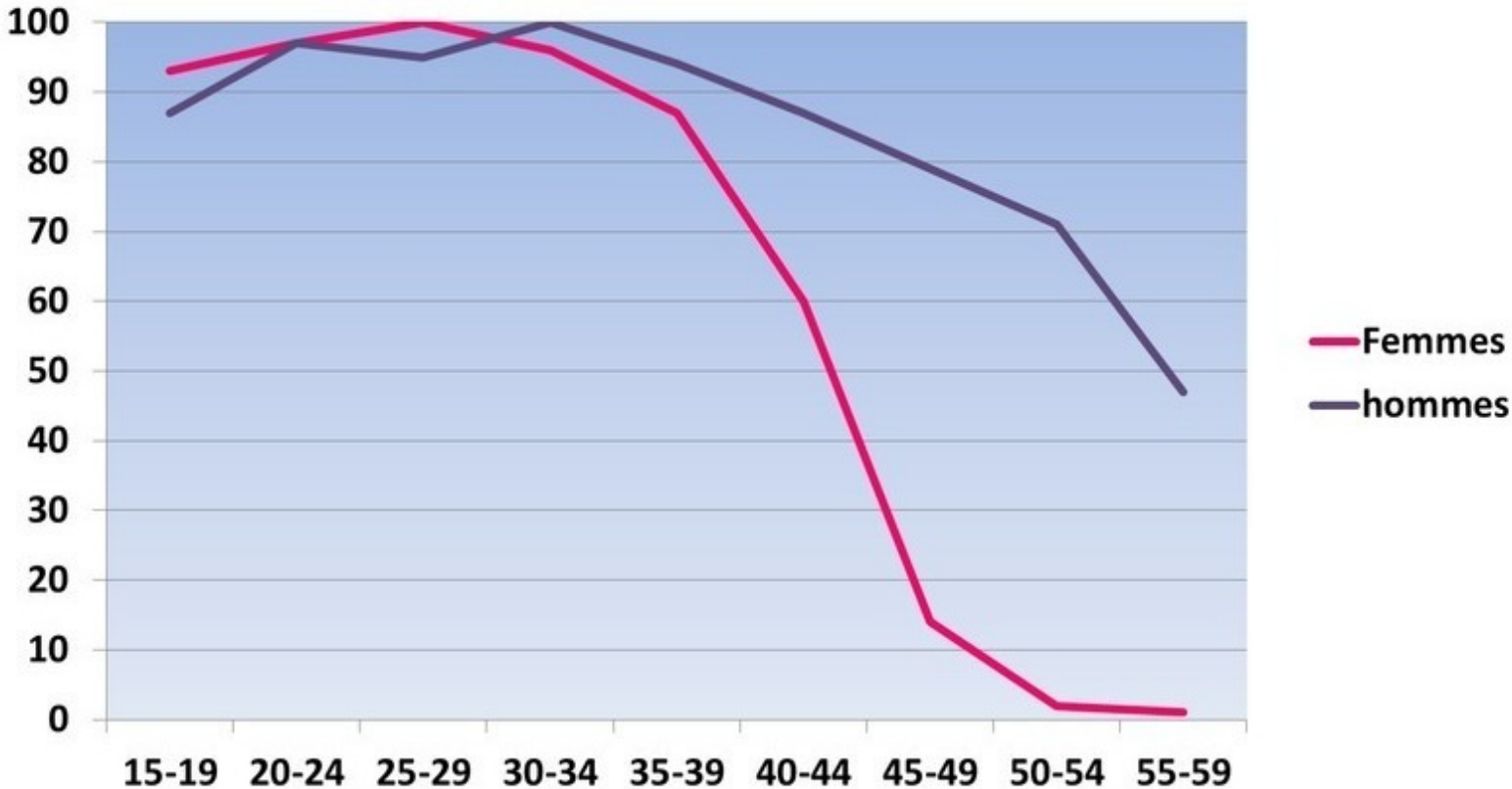
Explorer <u>simultanément</u> les 2 membres du couple

Etiologies d'infertilité féminine



Âge de désir d'enfant

Niveau de fertilité en % par rapport au niveau maximum



De La Rochebrochard E. Populations et sociétés, 2001.

Age féminin de désir d'enfant

ailable. Pooling of data was necessary to obtain a model
le population disappearance from birth to menopause and
tified by consistent findings at overlapping ages in the
t studies (Figure 1). To be acceptable for our model, each
n had to be intact and completely free of pathology. Each
as fixed, sectioned serially in paraffin wax and stained.
single ovary can yield thousands of sections, representing
al task for quantitative microscopy, sections were sampled
ar intervals of up to 1 in 200 and the sum multiplied by
ple frequency and, when appropriate, by a correction
The range of age-specific follicle numbers was substantial
nough differences in the precision of counting may have
ited, considerable biological variation between women
ame age is to be expected since this has been found in
ry animals which are subjected to rigorous experimental
etic control (Faddy *et al.*, 1987). Unfortunately, it was
ible to obtain total numbers of follicles from Block's study
953) because those measuring 0.1–1.0 mm diameter
cluded and the original specimens were no longer
e for recounting. For the sake of consistency, therefore,
del has been based on counts of follicles <0.1 mm
r since those follicles overwhelmingly dominate the
population (>99%) (Table I). These small follicles
a good estimate of total numbers well within the limits
ting precision and variations of the menstrual cycle

rate of follicle disappearance is not constant
and various models were tried to improve on
decay. A bi-exponential model was chosen
of follicles at x years of age given by:

$$\log y = \begin{cases} a_1 + b_1 x, & \text{for } y < y_c \\ a_2 + b_2 x, & \text{for } y > y_c \end{cases}$$

Such a model with $0 > b_1 > b_2$ would correspond to a
decline of follicles when y fell below a critical number
allow for continuity of equation (1), the parameters a_1,
a_2 and b_2 were constrained by:

$$[\log y_c - a_1]/b_1 = [\log y_c - a_2]/b_2$$

Thus, $y_0 = \exp(a_1)$ respresented the initial number of fol
b_1 the rate of decline until the critical number y_c was re
and b_2 the rate of decline following this. The model was
to the logarithms of the follicle counts by the least squares n
(Kotz and Johnson, 1983), giving the following estimate
their standard errors in parentheses and a residual sum of s
of 83.09 on 106 degrees of freedom:

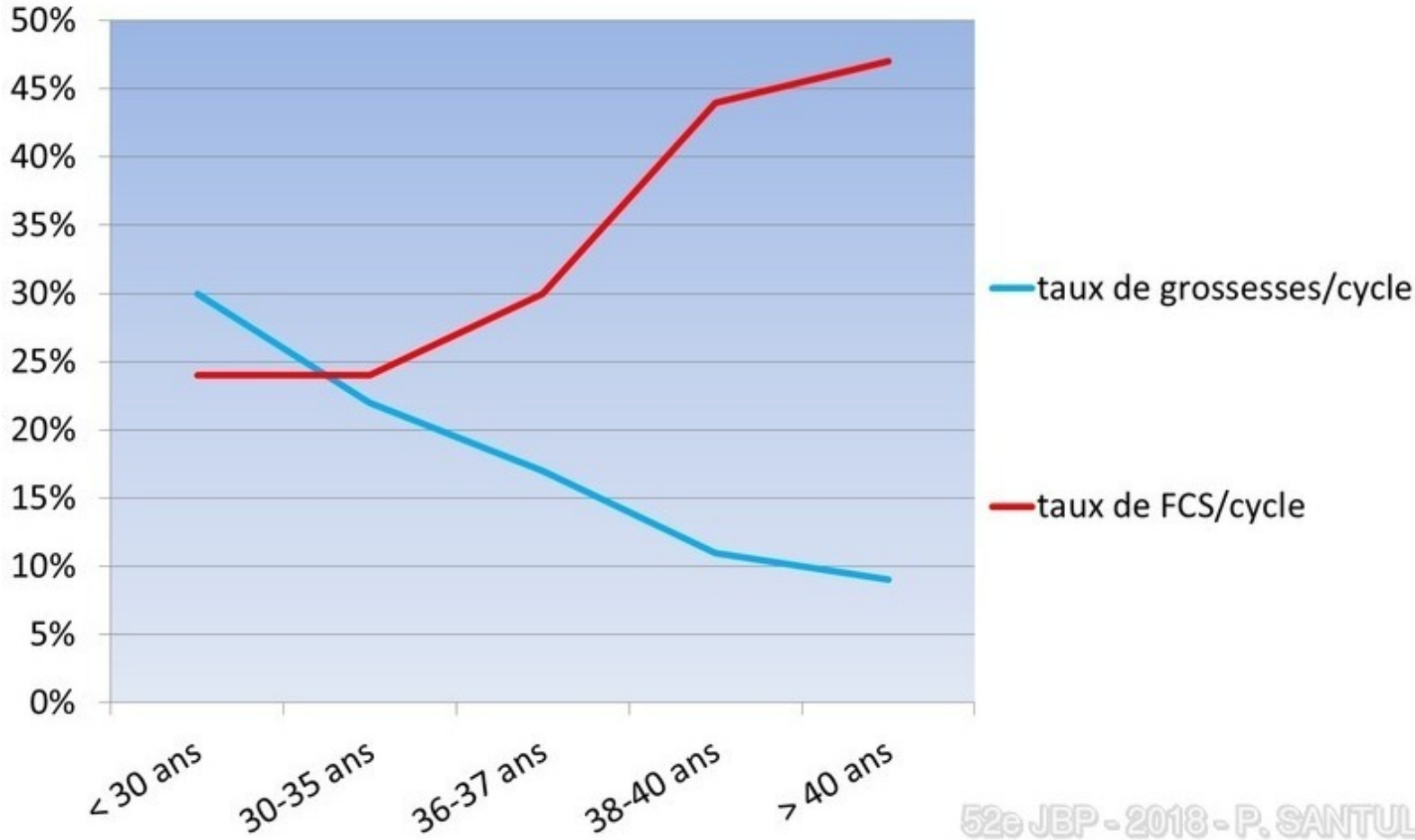
$$y_0 = 952\,000\ (225\,000), \quad b_1 = -0.097\ (0.007)$$
$$y_c = 25\,000\ (2270), \quad b_2 = -0.237\ (0.029)$$

This represented a highly significant ($P < 0.001$) improv

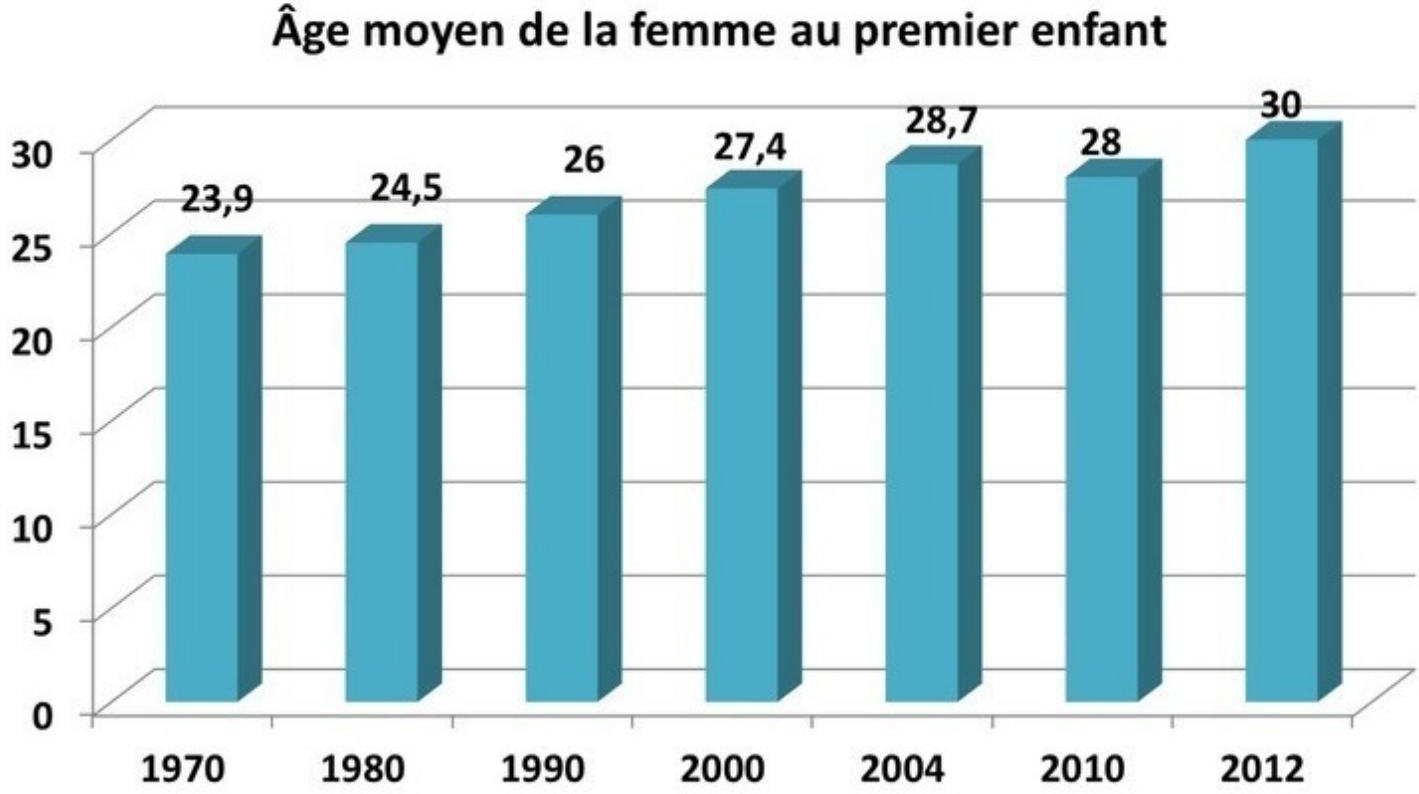
↓ qualité ovocytaire

Relation entre l'âge et le nombre de follicules. *(Gougeon et al., 1994)*

Evolution de la fertilité en fonction de l'âge de la femme



Âge de désir d'enfant



D'après INED

Quand « lancer » le bilan de débrouillage d'infertilité du couple?

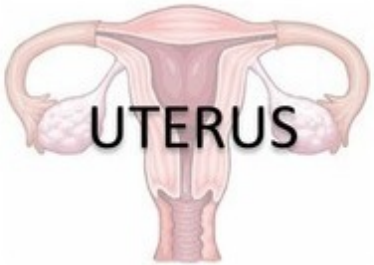
- Si absence de grossesse clinique évolutive après une année de rapports sexuels réguliers, sans contraception.

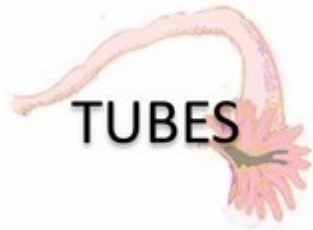
- Avant un an **si et seulement si** :
  - Femme de plus de 35 ans
  - Notion de troubles du cycle
  - Antécédents de pathologie génitale ♀ ou ♂

RPC CNGOF 2010

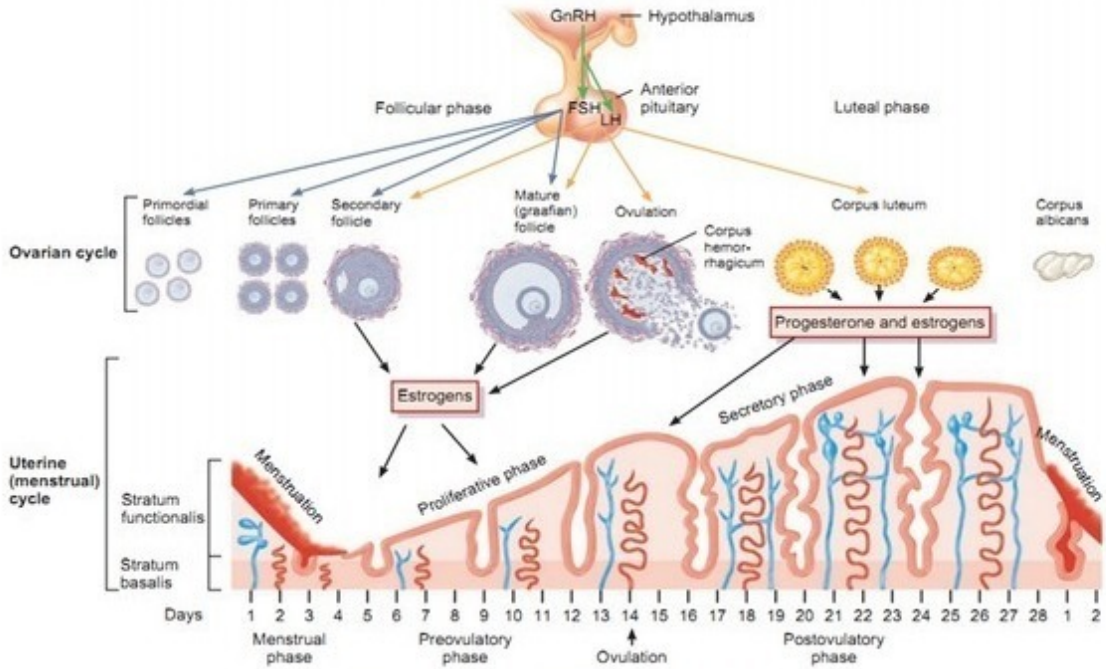
Quel bilan d'infécondité féminine en 2018?

The three boxes of FEMALE INFERTILITY

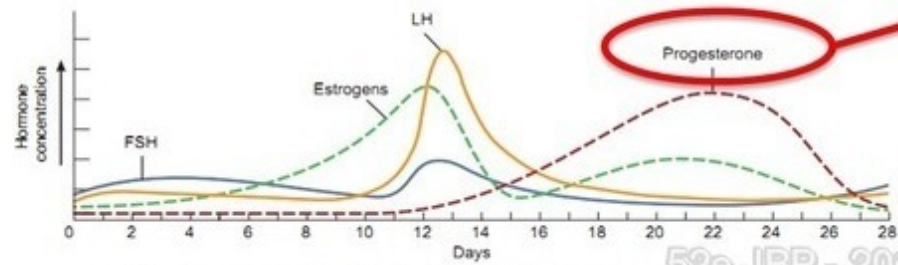




The menstrual cycle



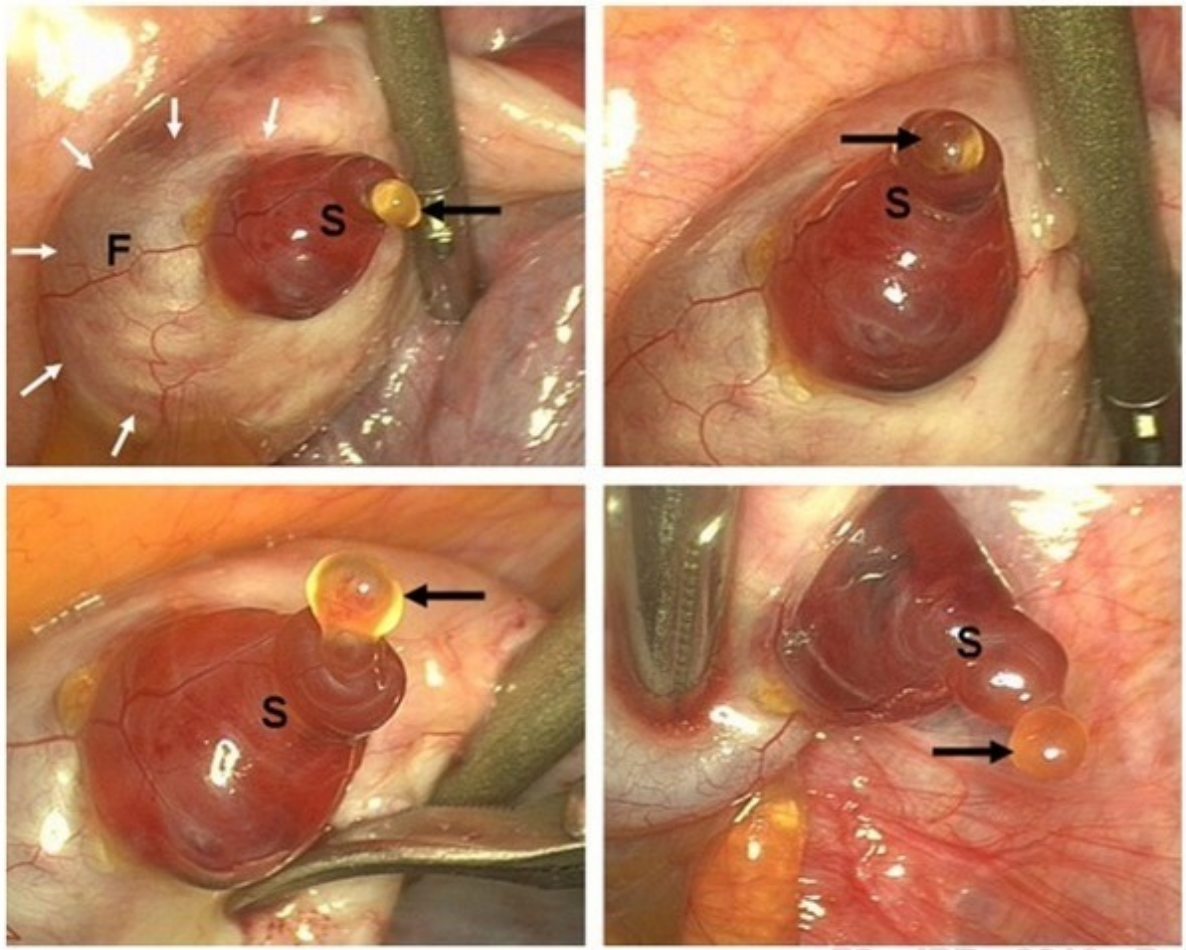
(a) Hormonal regulation of changes in the ovary and uterus



P
Day 24

(b) Changes in concentration of anterior pituitary and ovarian hormones

ovulation



1) RESERVE OVARIENNE =RO

DEFINITION

- Evaluation de la quantité de follicules dans les ovaires
- RO exacte: compte anatomopathologique des follicules primordiaux sur chaque ovaire
- Marqueurs de la RO: reflet indirect
  - ✓ Évaluation des follicules en croissance
  - ✓ Corrélation follicules en croissance et follicules primordiaux *(Gougeon et al 1996)*
- Evaluation quantitative différente de qualitative

OBJECTIFS

- DIAGNOSTIC:
  - ✓ Insuffisance Ovarienne Prématurée (IOP) ?
  - ✓ Diminished ovarian Reserve (DOR) ?
  - ✓ Syndrome des ovaires polykystiques (SOPK)?
  - ✓ Hypogonadisme-hypogonadotrope?

- THERAPEUTIQUE:

➢ Bonne/Normo/Mauvaise répondeuse

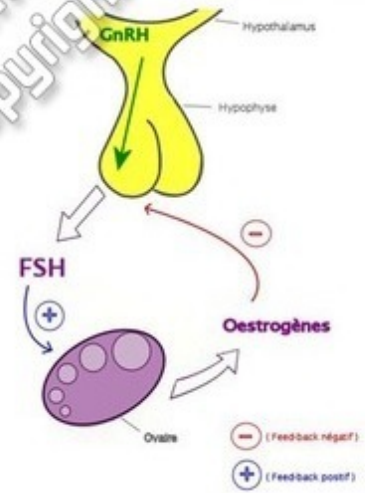
- ✓ Choix type de traitement, dose
- ✓ Identification des patientes à risque d'hyperstimulation ovarienne (HSO)

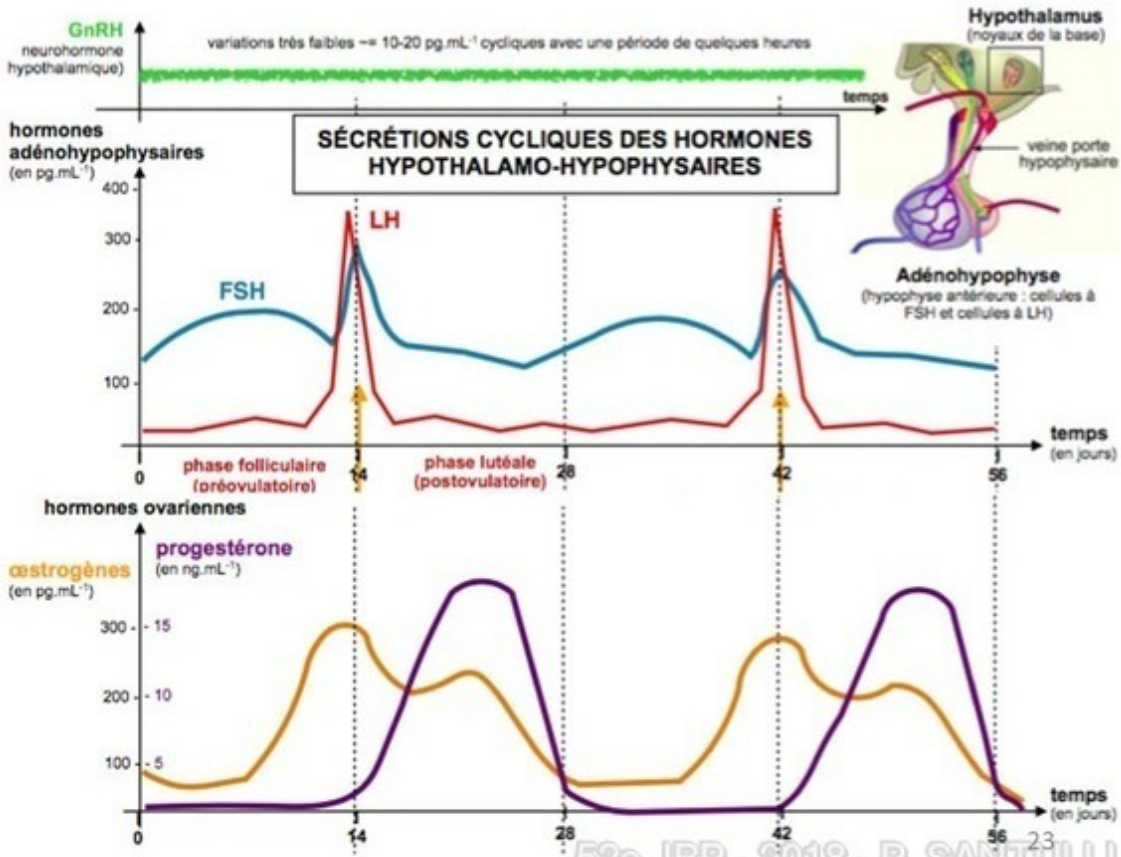
DIFFERENTS MARQUEURS DE RO

- Clinique: AGE
- Biologique: Dosages hormonaux J3
  - FSH
  - E2
  - AMH
- Echographie J3:
  - Compte des follicules antraux = CFA

FSH
= Follicle Stimulating Hormone

Sécrétion et variations intra-cycliques





Variations inter-cycliques

Cycle	bFSH (IU/l)[a]
1	2.1
2	4.4
3	3.0
4	1.8

[a] $P < 0.0001$.

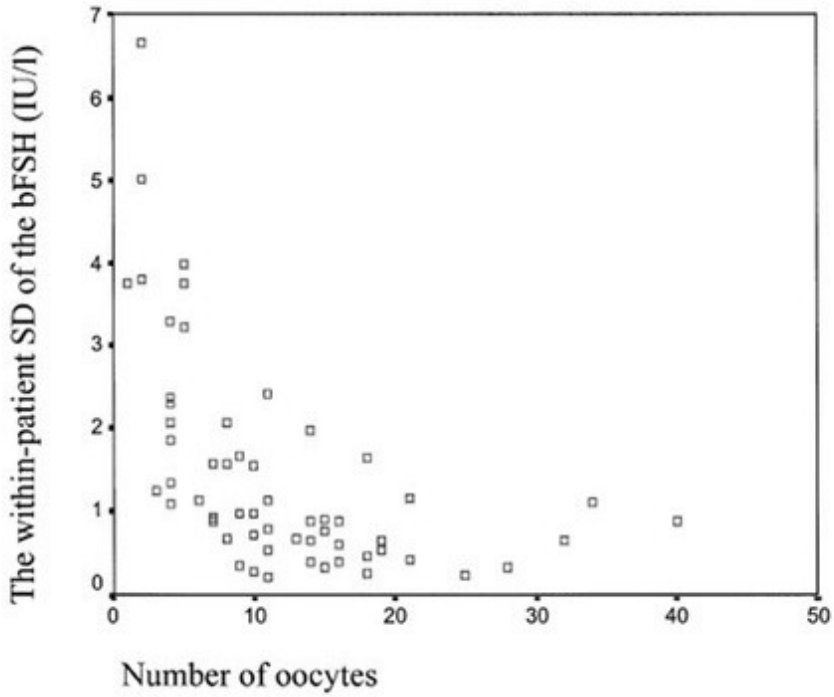


Figure 1. (**A**) The distribution of the intercycle variability of bFSH (IU/l), expressed by the SD according to the number of oocytes.

Kwee Human Repro 2004

Prédiction réponse en FIV et grossesses

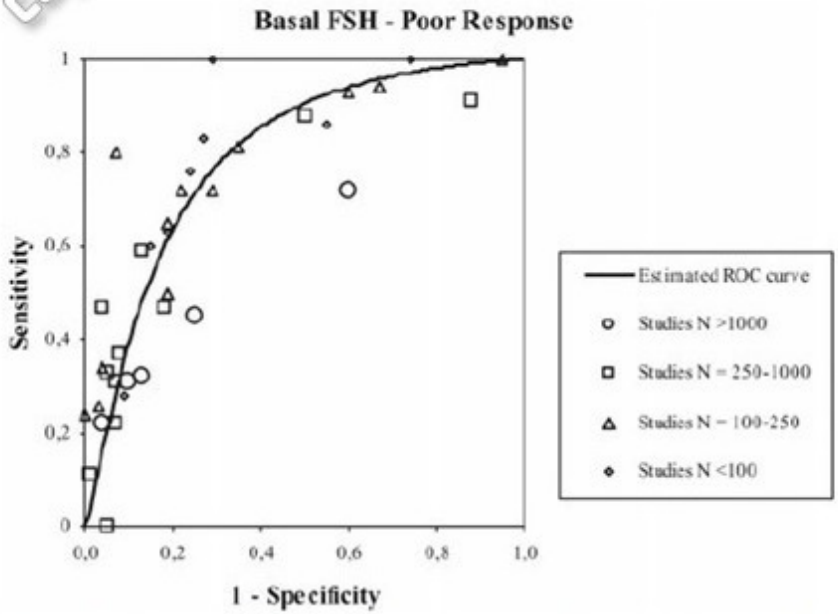


Figure 4. Estimated ROC curve and sensitivity–specificity points for all studies reporting on the performance of basal FSH in the prediction of poor response. Studies reporting on several threshold points are represented by an equivalent number of sens–spec points. *N* in the legend refers to the number of cycles studied, which in some studies is equivalent to the number of couples treated.

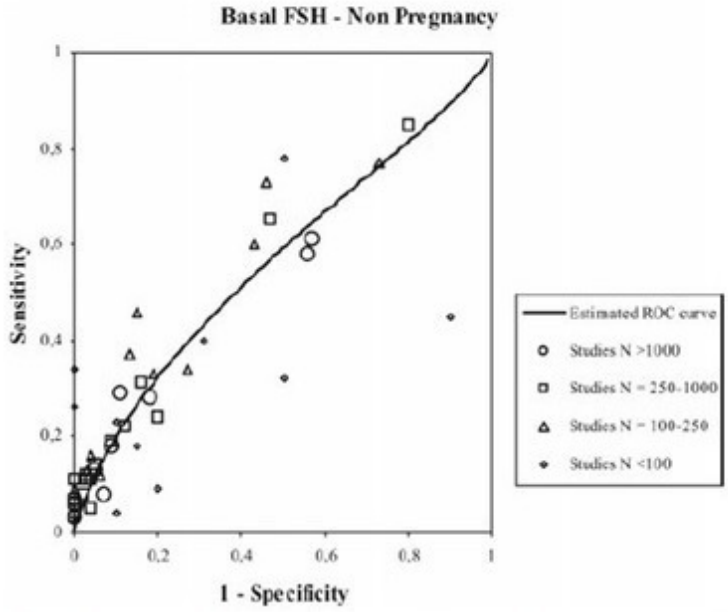


Figure 5. Estimated ROC curve and sensitivity–specificity points for all studies reporting on the performance of basal FSH in the prediction of non-pregnancy. Studies reporting on several threshold points are represented by an equivalent number of sens–spec points. *N* in the legend refers to the number of cycles studied, which in some studies is equivalent to the number of couples treated.

Broekmans Human Repro 2006

ESTRADIOL= E2

- Rôle prédictif débattu, non établi
- Permet interprétation FSH+++++

Prédiction réponse en FIV et grossesse

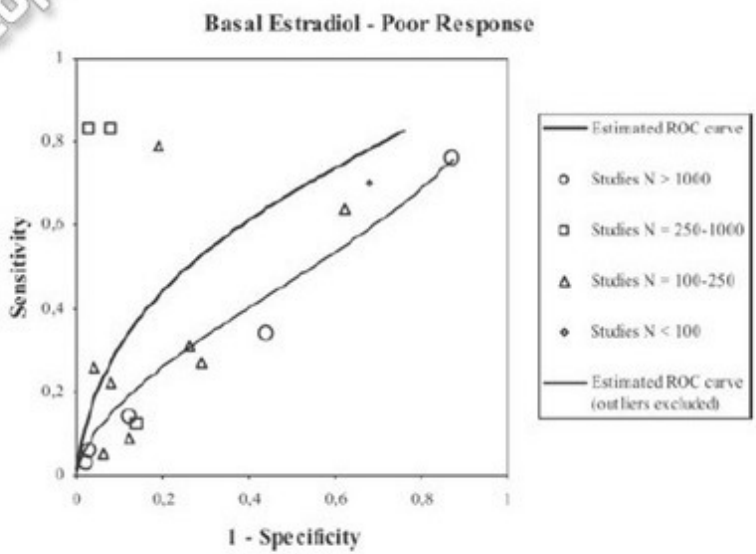


Figure 10. Estimated ROC curve and sensitivity–specificity points for all studies reporting on the performance of basal estradiol in the prediction of poor response. Studies reporting on several threshold points are represented by an equivalent number of sens–spec points. *N* in the legend refers to the number of cycles studied, which in some studies is equivalent to the number of couples treated.

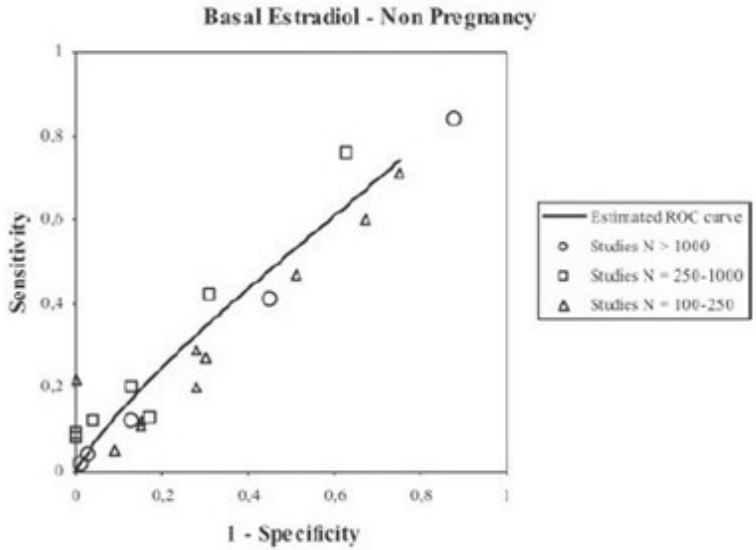
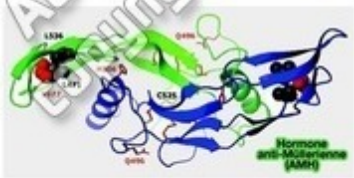


Figure 11. Estimated ROC curve and sensitivity–specificity points for all studies reporting on the performance of basal estradiol in the prediction of non-pregnancy. Studies reporting on several threshold points are represented by an equivalent number of sens–spec points. *N* in the legend refers to the number of cycles studied, which in some studies is equivalent to the number of couples treated.

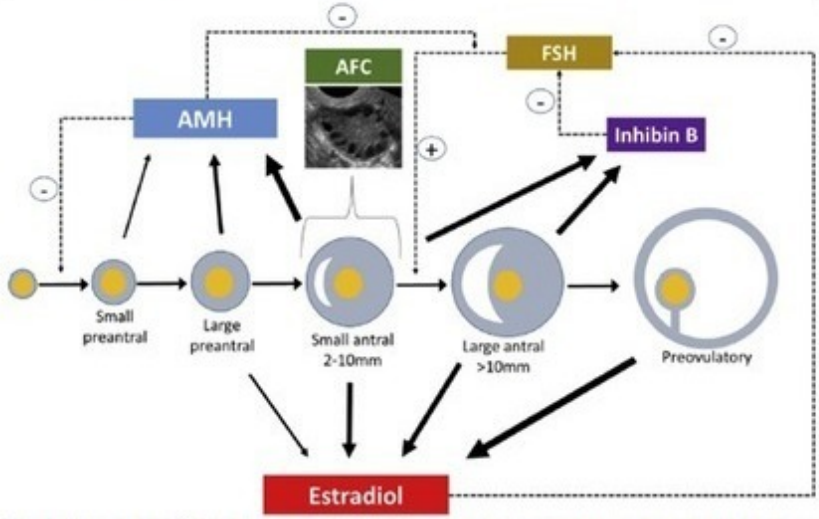
Broekmans human Reproduction 2006

AMH
= Anti-Mullerian-Hormone



Glycoprotéine de la famille TGFβ

FIGURE
Follicular stages reflected by ovarian reserve tests



Estradiol production by follicle increases as follicle develops being highest at preovulatory stage. Inhibin B is produced by granulosa cells of small and large antral follicles. Both estradiol and inhibin B inhibit pituitary secretion of follicle-stimulating hormone (FSH). Antimüllerian hormone (AMH) is produced by granulosa cells of primary and secondary follicles, but mostly small antral follicles. In comparison, antral follicular count (AFC) pertains only to small antral follicles (2-10 mm) as measured by transvaginal ultrasound. No ovarian reserve test is directly reflective of primordial follicular pool. Arrow thickness indicates relative production of ovarian marker.

Tal. Contemporary ovarian reserve tests. Am J Obstet Gynecol 2017.

Rôles:

✓inhibition recrutement follicules primordiaux

- souris KO AMH>> accélération perte folliculaire *(Durlinger, Endocrinology 1999)*

✓Inhibe action FSH

✓Inhibe action aromatase

(Grossman Fertil Steril 2008, Durlinger Endocrinology 2001)

Evolution AMH

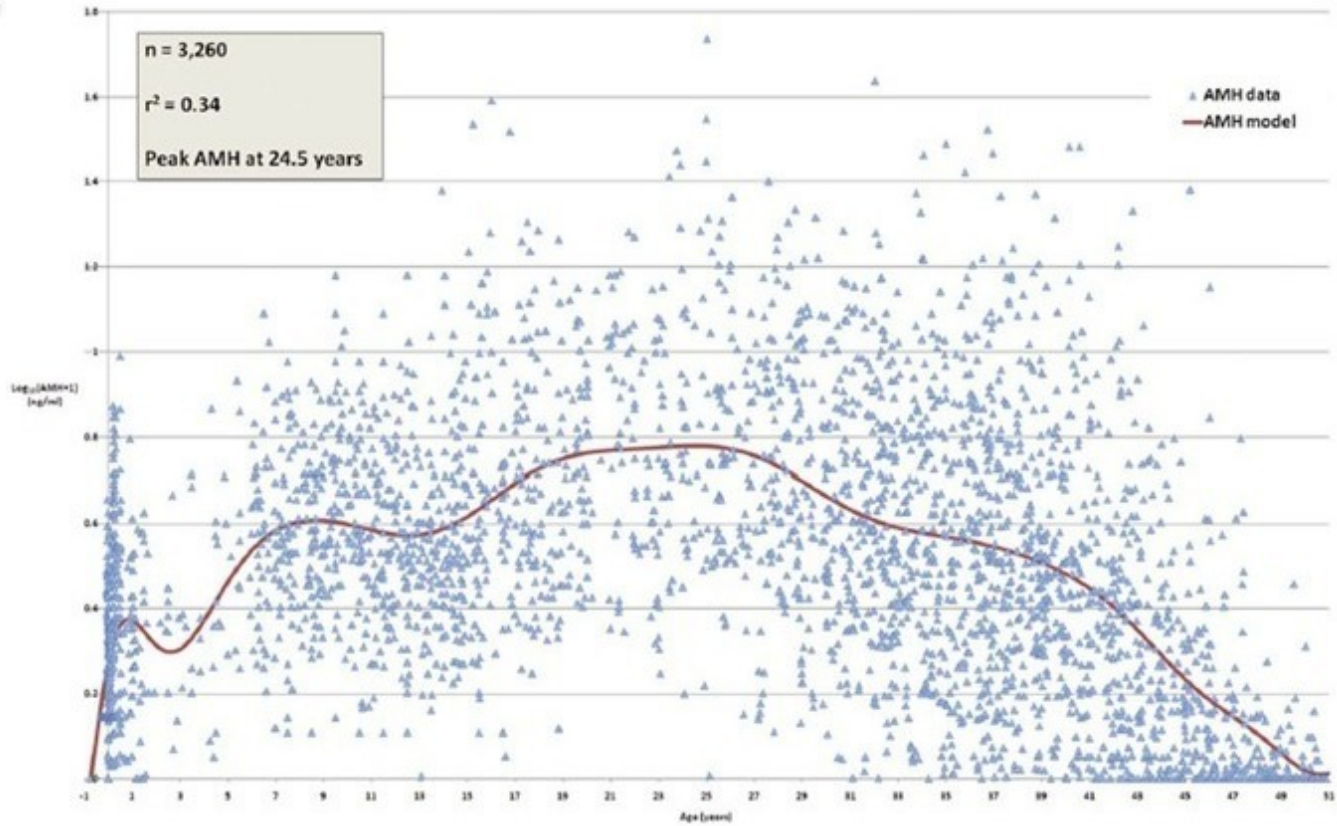
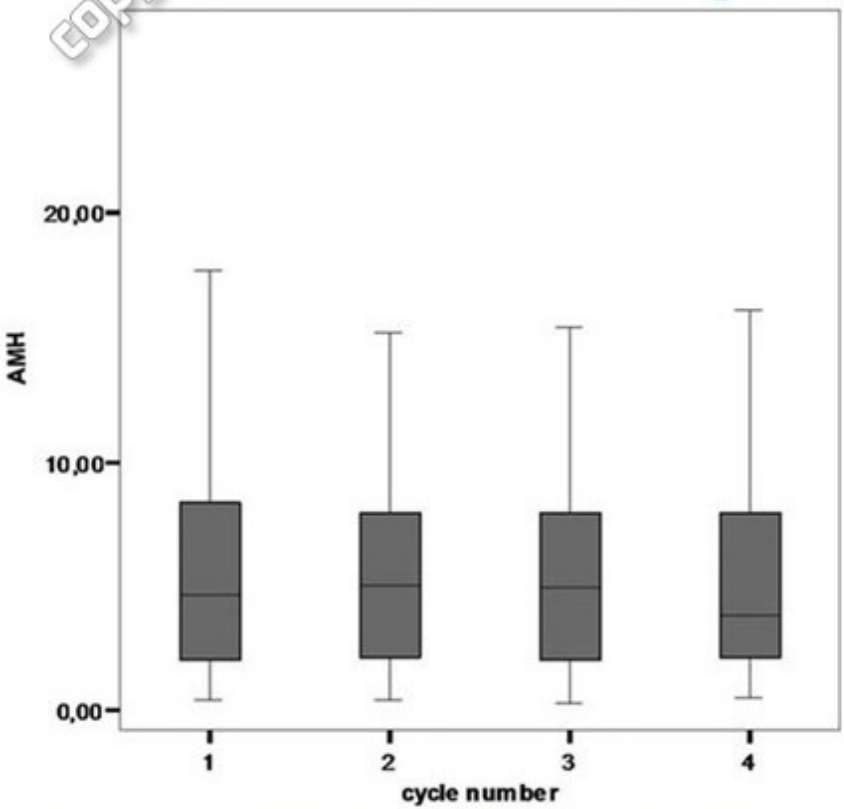


Figure 1. Serum AMH data. The red line is the model that best fits the 3,260 datapoints shown as triangles. The coefficient of determination, r^2, is 0.34, indicating that 34% of variation in serum AMH concentrations is due to age alone. Peak serum AMH is at 24.5 years.
doi:10.1371/journal.pone.0022024.g001

Kelsey Plos one 2011

AMH peu de variations inter et intra-cycliques



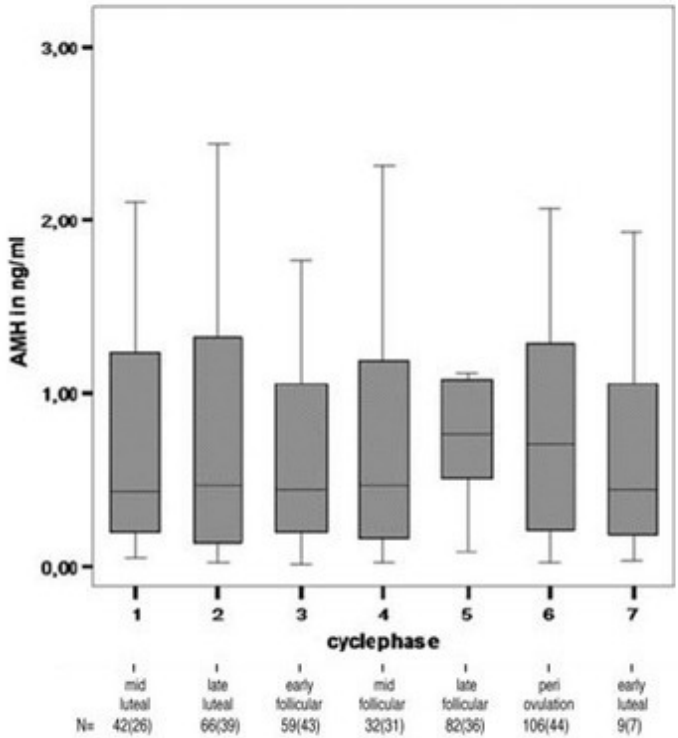


Figure 1 Box plots depicting distribution of AMH levels (in ng/ml) and AFCs (of all follicles 2–10 mm in both ovaries) in the early follicular phase across four cycles.

Von disseldorp Human Repro 2010

Hehenkamp JCEM 2006

AMH et fertilité naturelle

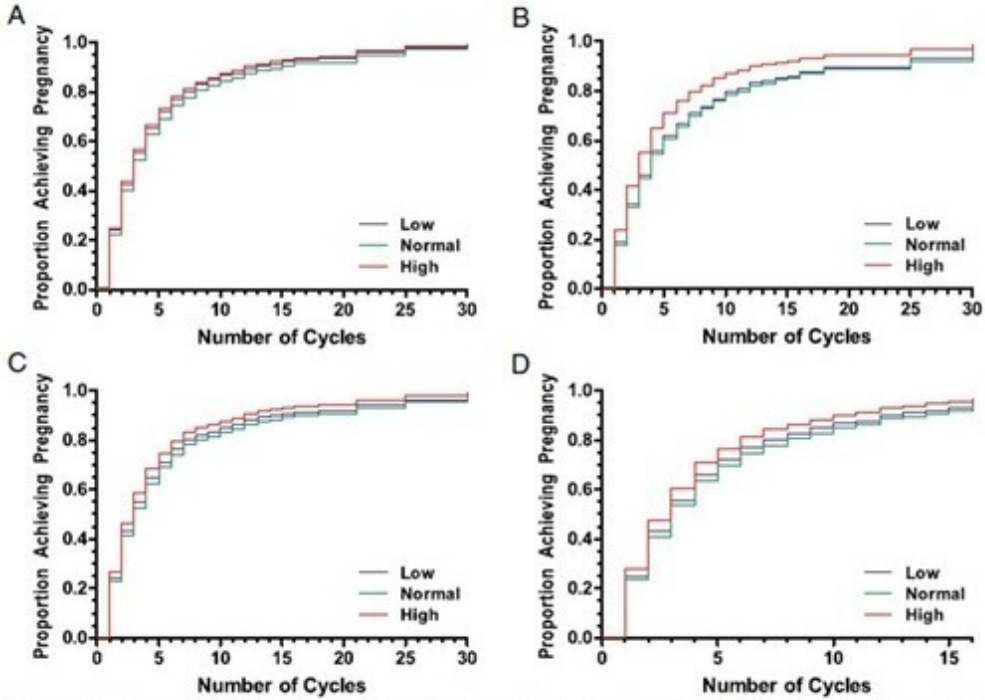
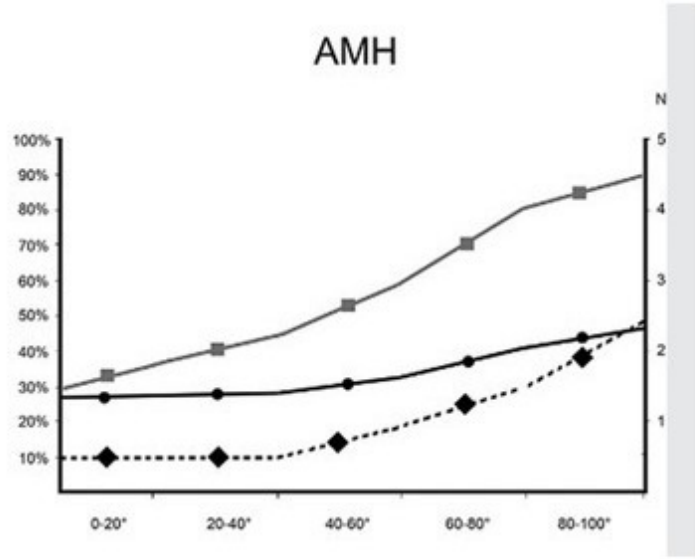


Figure 1. KM cumulative hazard plots illustrating the number of cycles needed to achieve an hCG detected pregnancy in the overall cohort (A), women with no previous live birth (B), women with one previous loss (C), and women with their last loss within 1 year of randomization (D). No significant differences were observed between women with low (blue), normal (green), or high (red) AMH.

Zarek, JCEM 2015

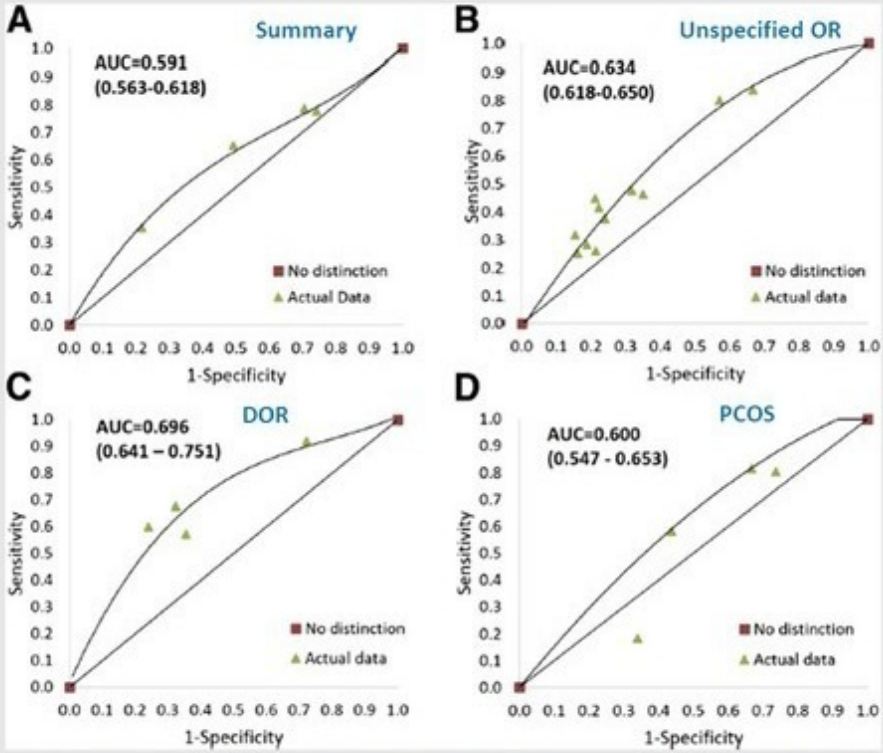
AMH et blastocystes euploïdes?



Mean number of euploid blastocysts (n, *diamonds*), mean rate of euploidy (%, *circles*), and the probability of having at least one euploid blastocyst (%, *squares*) in women

La Marca Fertil Steril 2017

AMH et FIV: grossesses



(**A**) Summary ROC curve of AMH in the prediction of implantation after ART. (**B–D**) Summary ROC curves of AMH in the prediction of clinical pregnancy after ART in (**B**) women with unspecified ovarian reserve; (**C**) women with DOR; and (**D**) women with PCOS.

Tal. AMH as predictor of implantation and pregnancy. Fertil Steril 2015.

Tan Fertil Steril 2015

PREVOIR LA REPONSE A LA SMO: AMH

POR (poor ovarian response): Critères de Bologne

ESHRE 2011

At least two of the following three features must be present:

(i) Advanced maternal age (≥40 years) or any other risk factor for POR;

(ii) A previous POR (≤3 oocytes with a conventional stimulation protocol);

(iii) An abnormal ovarian reserve test (i.e. AFC <5–7 follicles or AMH <0.5–1.1 ng/ml).

Two episodes of POR after maximal stimulation are sufficient to define a patient as poor responder in the absence of advanced maternal age or abnormal ORT.

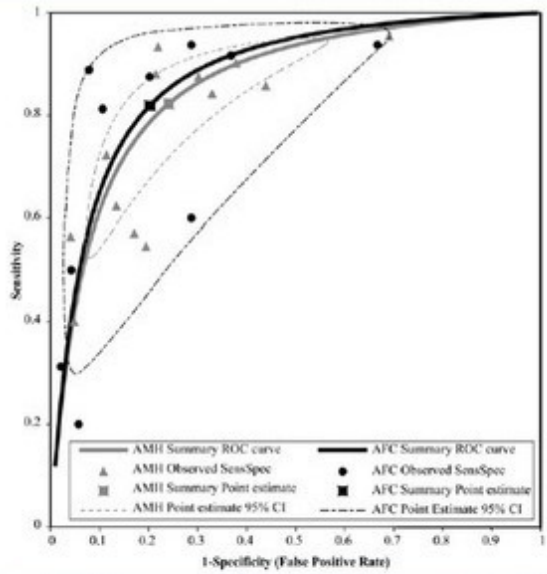


Figure 2 AMH and AFC in the prediction of an excessive response. *Note:* Regardless of the number of cut-offs mentioned per study, only one cut-off was taken into analysis. For the observed values of sensitivity–specificity points, all cut-offs are displayed.

Risque d'HSO

Broer Human Repro 2011

2) LES ANDROGENES

Quand doser androgènes?

- Spanioménorrhée/Aménorrhée
- Hyperandrogénie clinique (hirsutisme, acné, alopécie, hyperséborrhée) voire signes de virilisation (hypertrophie clitoridienne, voix rauque)

Hyperandrogénie biologique: les diagnostics

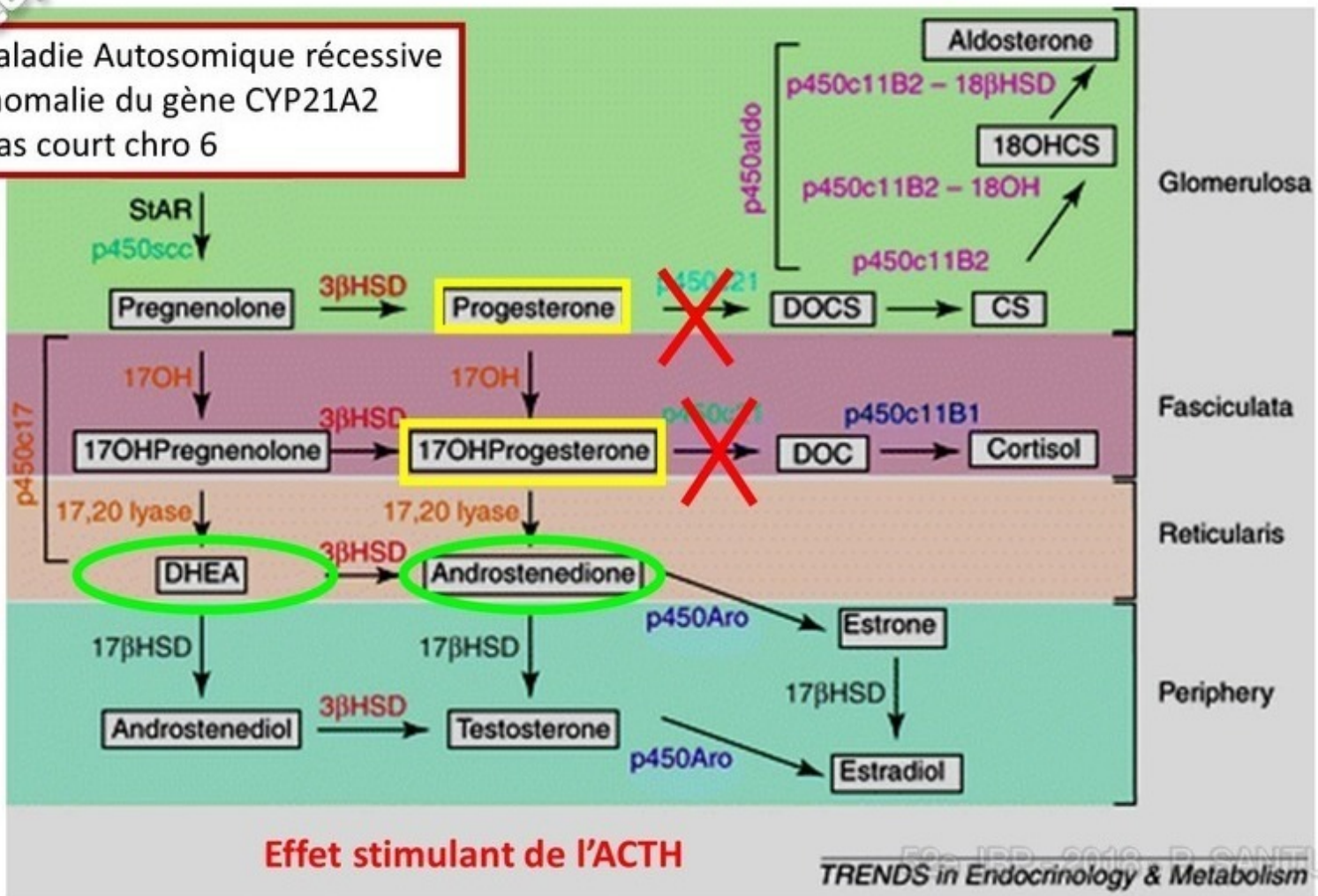
- SOPK
- Bloc 21OH non classique (et autres rares blocs surrénaliens…)
- Rares tumeurs ovariennes virilisantes (tumeur Sertoli-Leydig) et hypercorticisme (d'origine surrénalienne ou hypophysaire)

Dosage de la 17-OH-progestérone

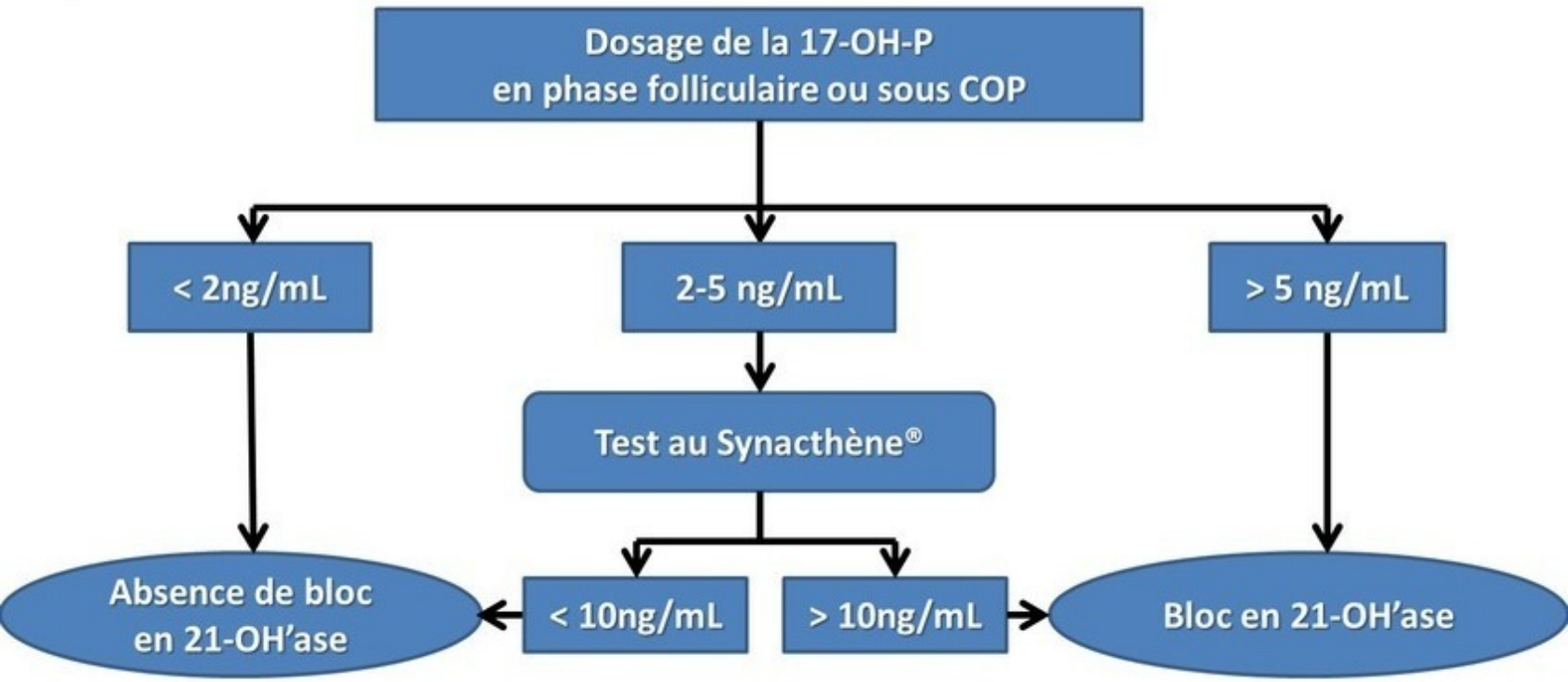
- Déficit en 21-OH'ase à révélation tardive est un diagnostic différentiel du SOPK ++ ***(Rotterdam 2003)***
  - Or SOPK = diagnostic d'exclusion !!
  - Donc dosage systématique dans tout bilan de dysovulation a fortiori si hyperandrogénie clinique et/ou biologique

Blocs en 21-hydroxylase

Maladie Autosomique récessive
Anomalie du gène CYP21A2
Bras court chro 6



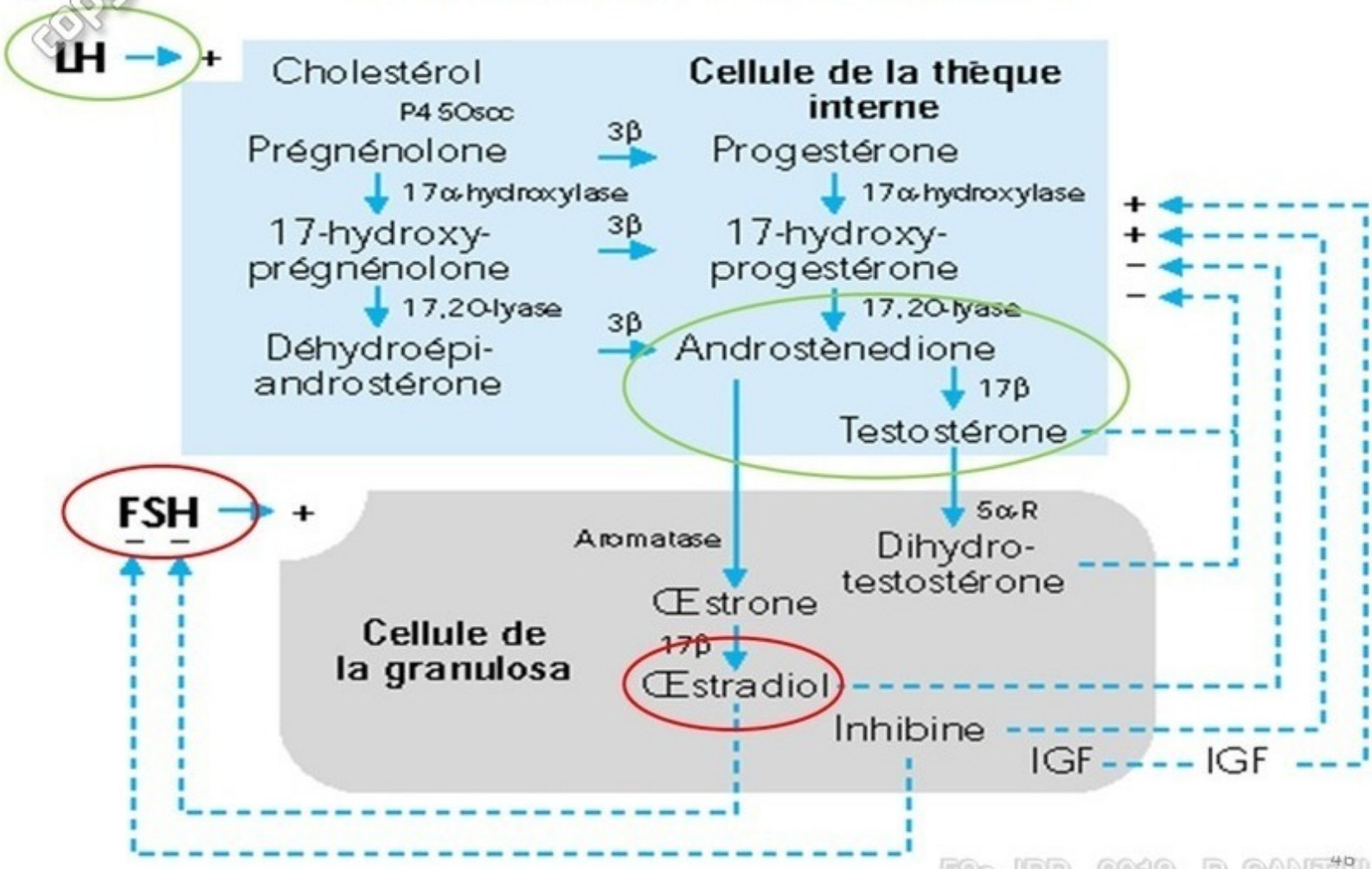
Dépistage des formes « non classiques »



Pour certains, le test au SYNACTHENE® est fait d'emblée en cas d'hyperandrogénie

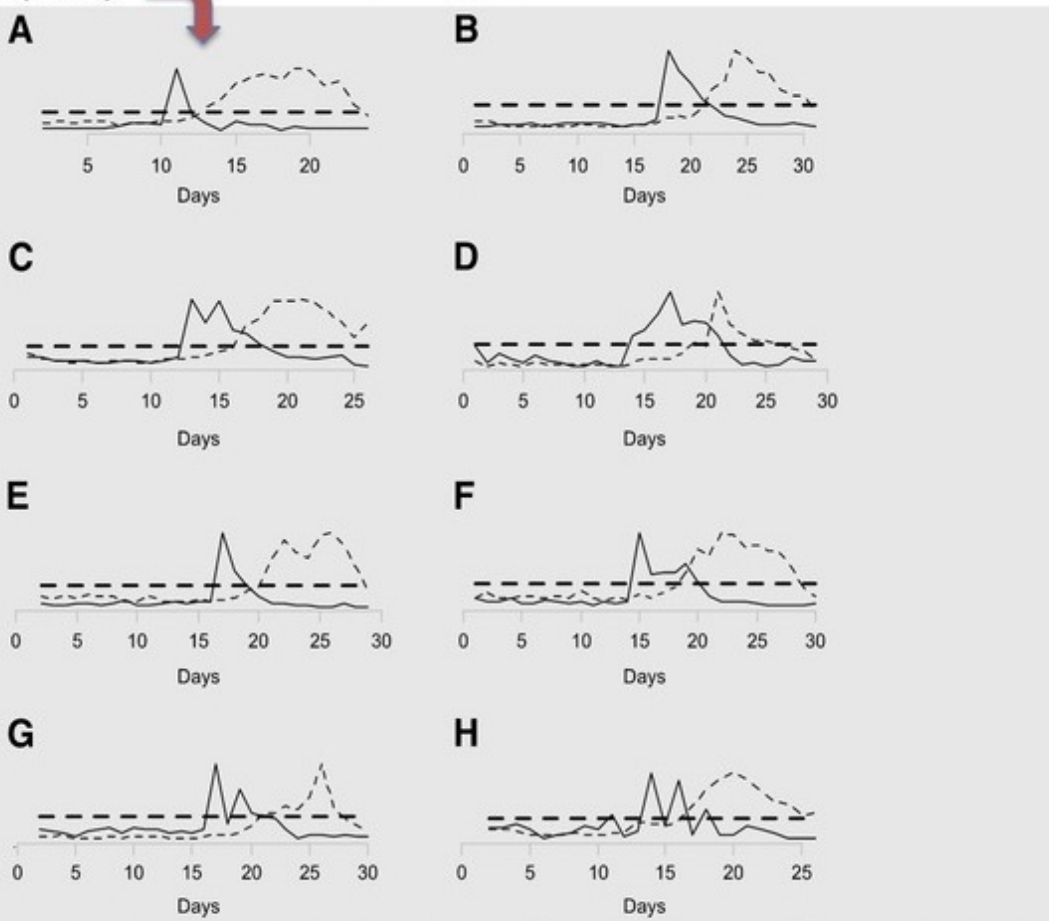
3) ET LA LH?

Théorie bi-cellulaire



Pic LH

Single-peaked= 134/283 (48%)



The LH surge variants. Examples of cycles with (A) short, (B) medium, (C) double, and (D) prolonged LH surges and (E) single peak, (F) plateau, (G) double peak, and (H) multiple LH peaks. The dashed *horizontal line* represents 30% of the maximum amplitude of the LH peak. The LH and pregnanediol-3α-glucuronide profiles are shown with solid and dashed lines, respectively.

Direito. Variability of the LH surge. Fertil Steril 2013.

La LH

N’est pas un marqueur de la RO mais:

Argument indirect de SOPK

LH>FSH

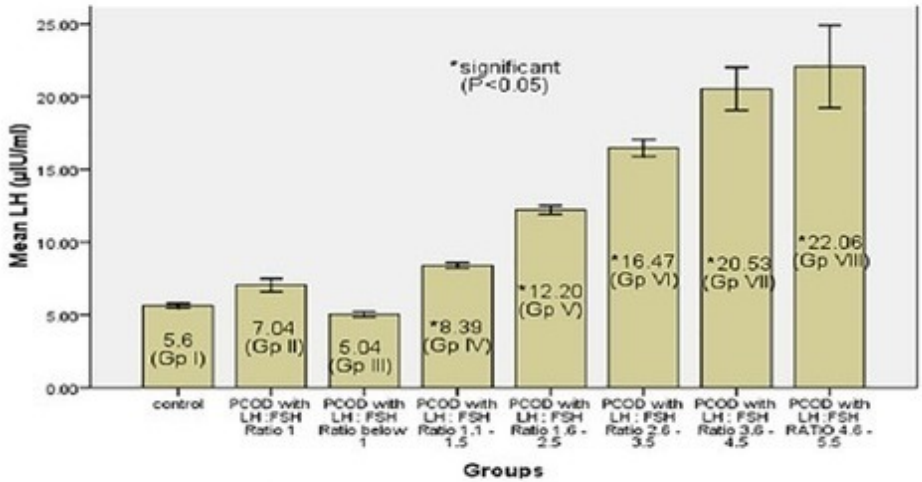


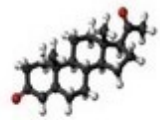
Fig. 1. The levels of LH in control and various PCOS cases.

Malini General and Comparative Endocrinology 2018

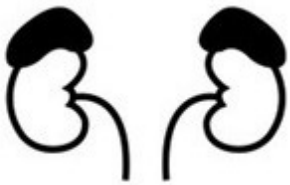
4) ET LA PROGESTERONE?

Progesterone

❖ **Hormone stéroïde** (dérivée du cholestérol)



❖ **Production**



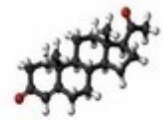
Surrénales

Corps jaune

Placenta

Progesterone

❖ **Hormone stéroïde** (dérivée du cholestérol)



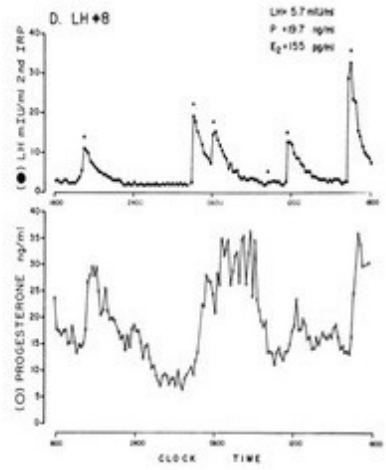
❖ **Production**

- **Organe endocrine transitoire**
  - **14 jours**
  - **11 semaines si grossesse**

  (relais placenta)

Corps jaune

- **Stimulation par LH/ hCG**

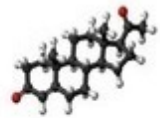


Filicori et al, 1984

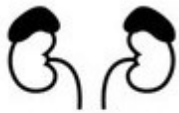
- **Sécrétion pulsatile de progestérone**

Progesterone

- **Hormone stéroïde** (dérivée du cholestérol)



- **Production**

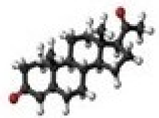


- **Rôles**

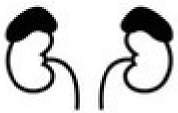
  - Transforme l'endomètre prolifératif (E2) en endomètre sécrétoire
  - Défini de la fenêtre d'implantation (J5 à J8 post ovulation)
  - Permet l'implantation
  - Maintien de la grossesse

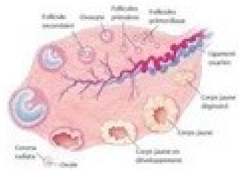
Progesterone

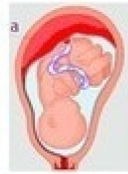
- **Hormone stéroïde** (dérivée du cholestérol)



- **Production**

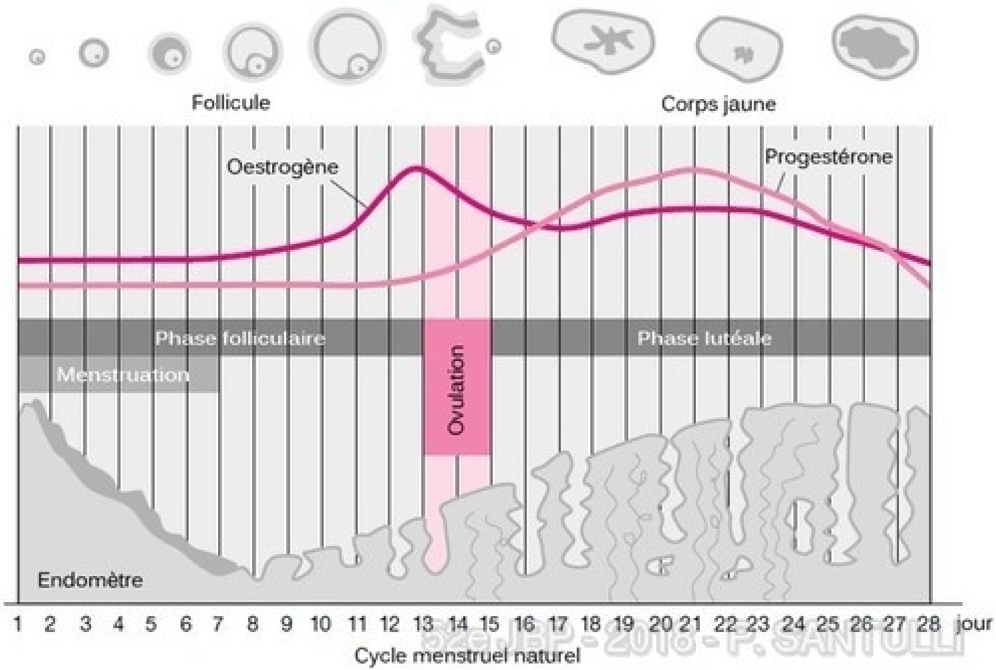






- **Rôles**

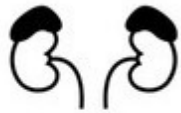
- **Variations normales**
  - **Phase folliculaire**
    - 0.2 – 1.4 ng/mL
  - **Phase lutéale**
    - 3.3 – 28.0 ng/mL

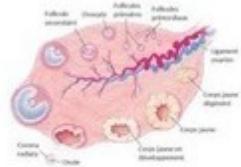


Progesterone

- **Hormone stéroïde** (dérivée du cholestérol)

- **Production**





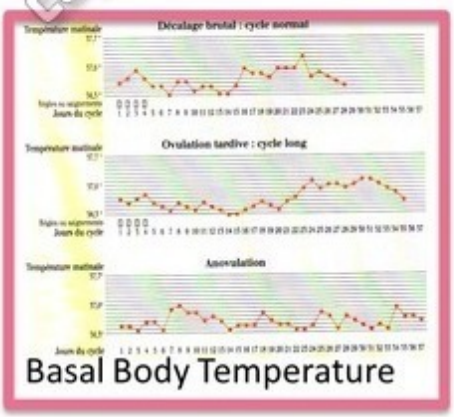
- **Rôles**

- **Variations normales**
  - **Phase folliculaire**
    - 0.2 – 1.4 ng/mL
  - **Phase lutéale**
    - 3.3 – 28.0 ng/mL

Très dépendant de la technique de dosages de la P

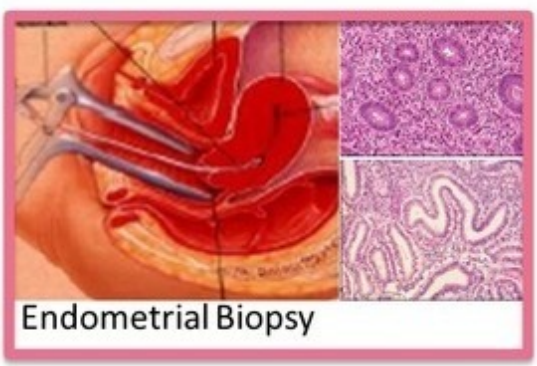
Patricot et al, 1999

Diagnostic insuffisance lutéale



Basal Body Temperature


Plasma Progesterone assay


Endometrial Biopsy

Diagnostic Marker ?

Pelvic ultrasound

→ → → Urgent need to develop new validated markers

Quand la doser?

- Possible devant spanioménorrhée ou des cycles courts
- J20-22 en moyenne mais à moduler selon durée du cycle
- Objectif: vérifier présence ovulation
- Taux > 5ng/ml

- Aucun intérêt à J3

5) ET LA PROLACTINE!

Quand la doser?

- Spanio/aménorrhée
- Galactorrhée

6) ET LA TSH

Pourquoi doser la TSH?

Hypothyroïdie

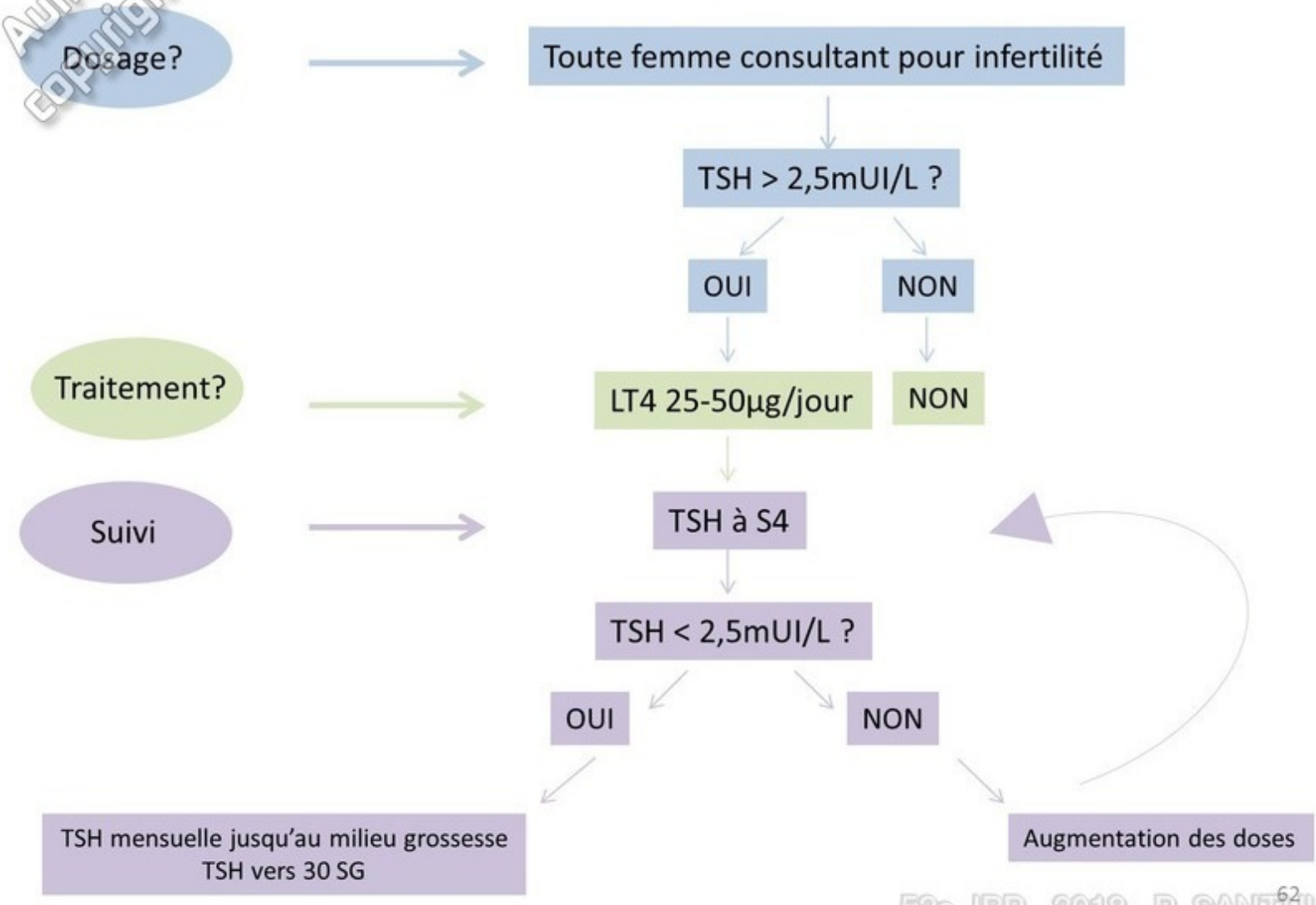
- Association possible avec la fertilité, mais données peu solides
- Effets sur la grossesse:
  - FCS
  - Altère développement neuro-cognitif
  - Prématurité
  - Baisse QI…

Hypothyroïdie infra-clinique

- Association possible avec la fertilité, **mais données encore moins solides**
- Effets sur la grossesse possibles **mais données peu solides:**
  - FCS
  - Prématurité…..

American Thyroid Association 2017

TSH et PMA: American thyroid Association 2017



Quel bilan? Quand le réaliser?

- Entre J2 et J5 d'un cycle spontané ou déclenché par duphaston
- Si test au duphaston négatif : attendre 10 jours après l'arrêt

Hormonologie

Au minimum

Faire doser à J3 du cycle

- FSL
- LH
- Estradiol
- AMH
- TSH

Si spanioménorrhée, ajouter :

- Testostérone totale
- 17 hydroxyprogestérone
- Prolactine

Si aménorrhée, ajouter :

- HCG
- Testostérone totale
- 17 hydroxyprogestérone
- Prolactine

Si hyperandrogénie clinique ajouter :

- Testostérone totale
- 17 hydroxyprogestérone

Imagerie

- Echographie pelvienne **sur le même cycle**

Pas de dosage de progestérone en phase folliculaire!!

PAS D'URGENCE

Suivi biologique de l'AMP

- Le Bilan
  - Reserve ovarienne FSH, E2, AMH
  - Androgènes: 17 OHP
  - LH
  - Progesterone
  - Autres: TSH, PRL

PAS D'URGENCE

- *Le Traitement*
  - *SMO-IIU*
  - *FIV*
  - *TEC*

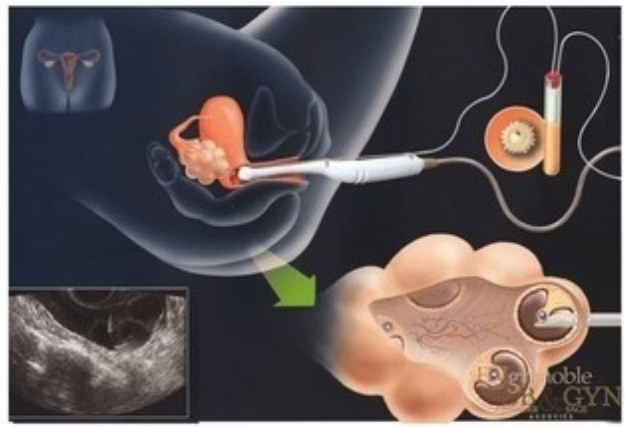
URGENCE +++

Stimulation de l'ovulation

Mono-folliculaire

SMO +/- IIU

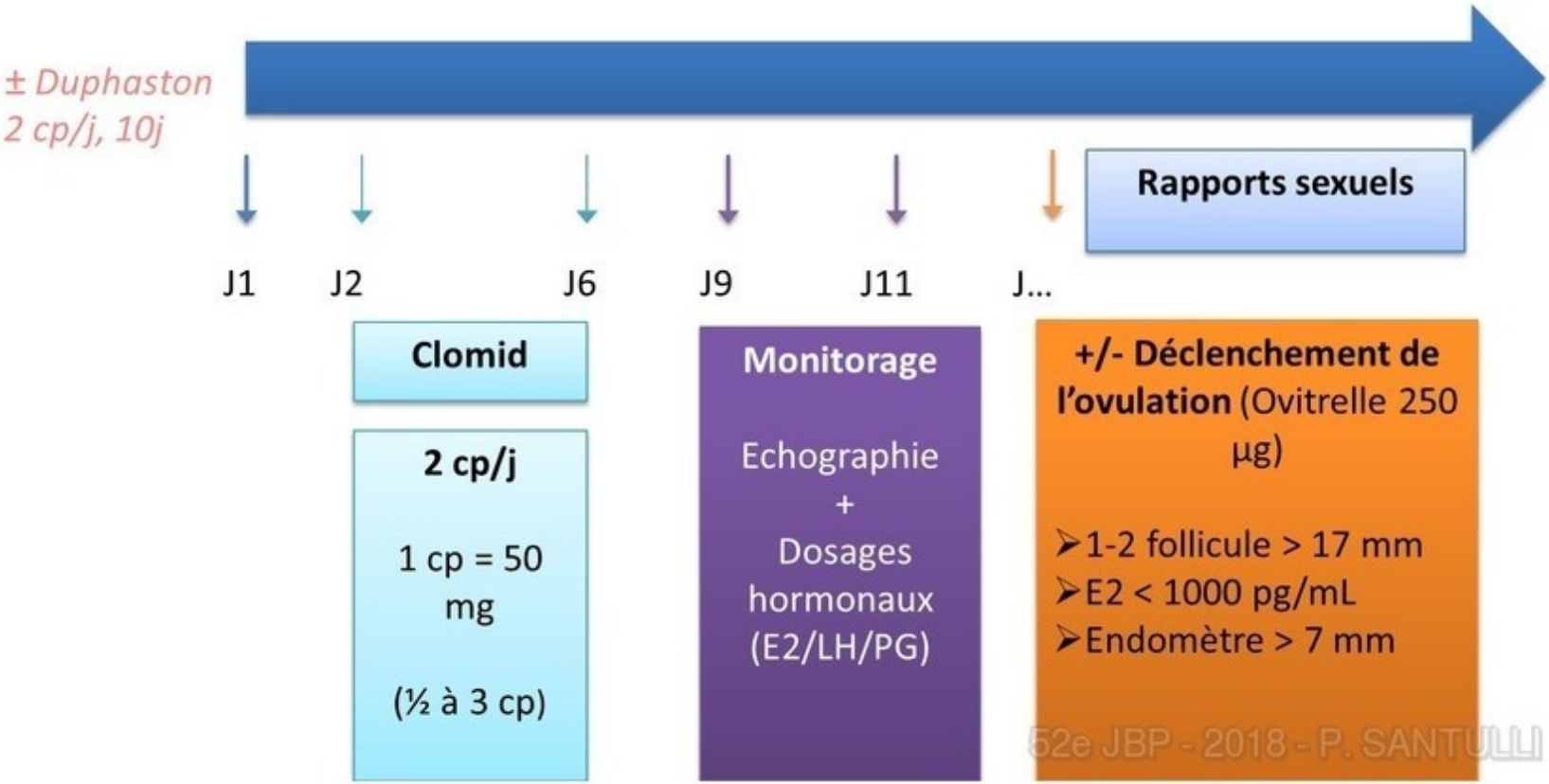
Multi-folliculaire



FIV/ICSI

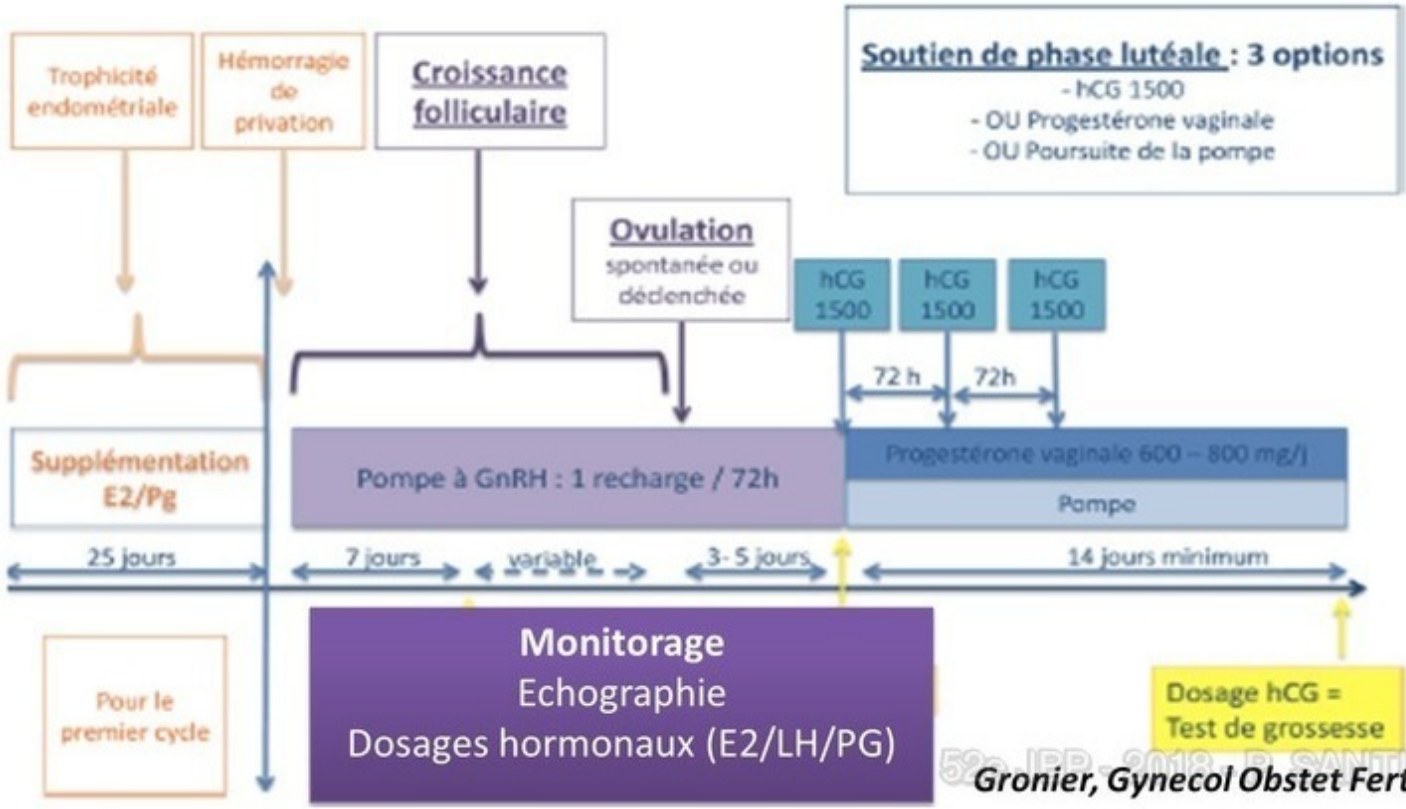
Stimulation simple de l'ovulation

Citrate de Clomifène : Utilisation clinique



Stimulation simple de l'ovulation

Pompe à GnRH : Utilisation clinique



Gronier, Gynecol Obstet Fertil, 2014

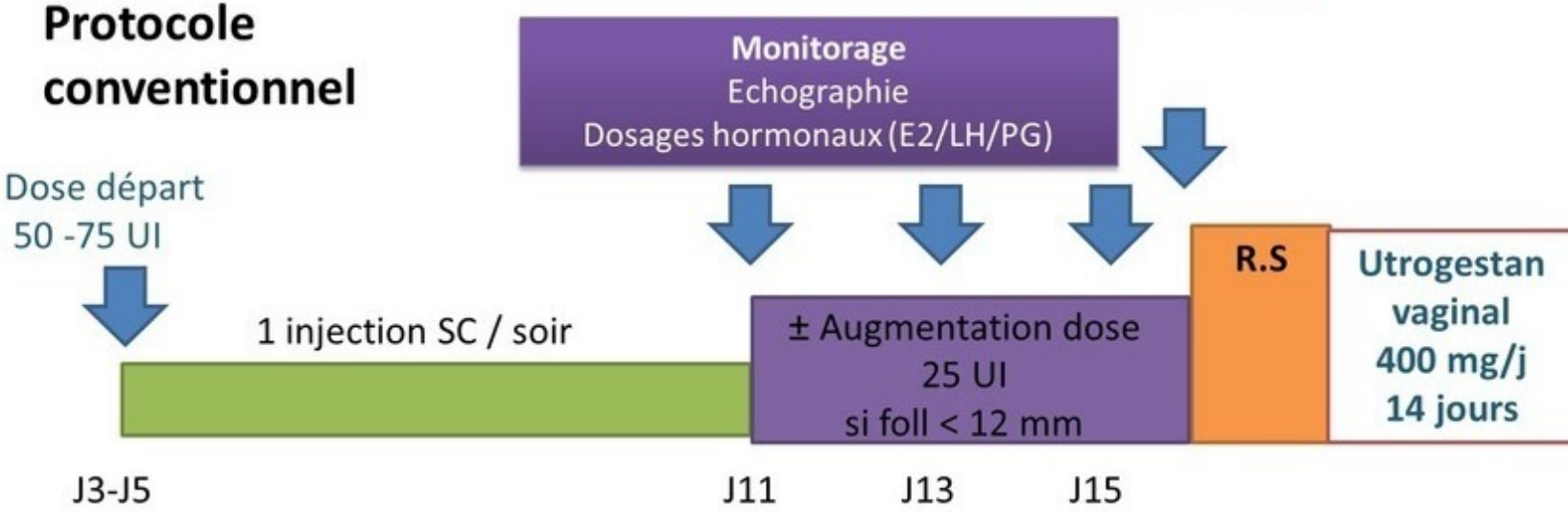
Stimulation simple de l'ovulation

Gonadotrophines : Utilisation clinique

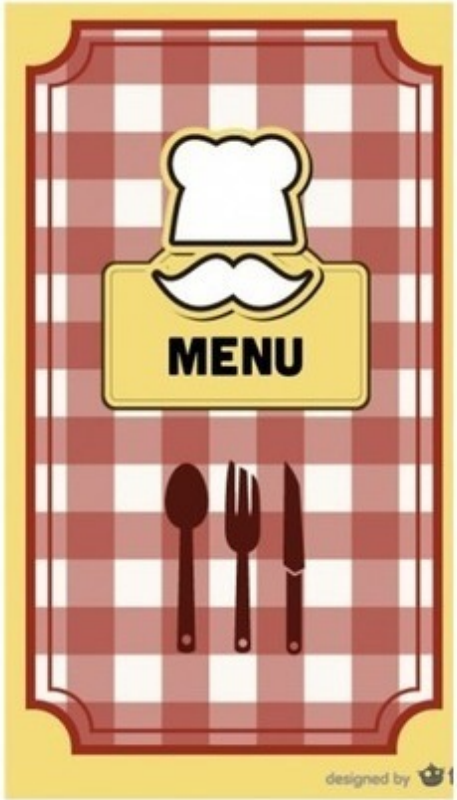
↗ Protocole ?

Ovitrelle 250 µg
1-2 Foll ≥ 17 mm
E2 < 1000 pg/mL
Endomètre > 7mm

Protocole conventionnel



Marmiton.fiv



Les bons ingrédients de base:

Le blocage de l'axe hypothalamo-hypophysaire

La stimulation ovarienne (et le monitorage)

Le déclenchement de l'ovulation

Les épices:

La synchronisation

Le soutien de la phase lutéale

Blocage de l'axe hypothalamo-hypophysaire

I. But

Eviter pic de LH prématuré, déclenché par les taux supra-physiologiques d'Estradiol

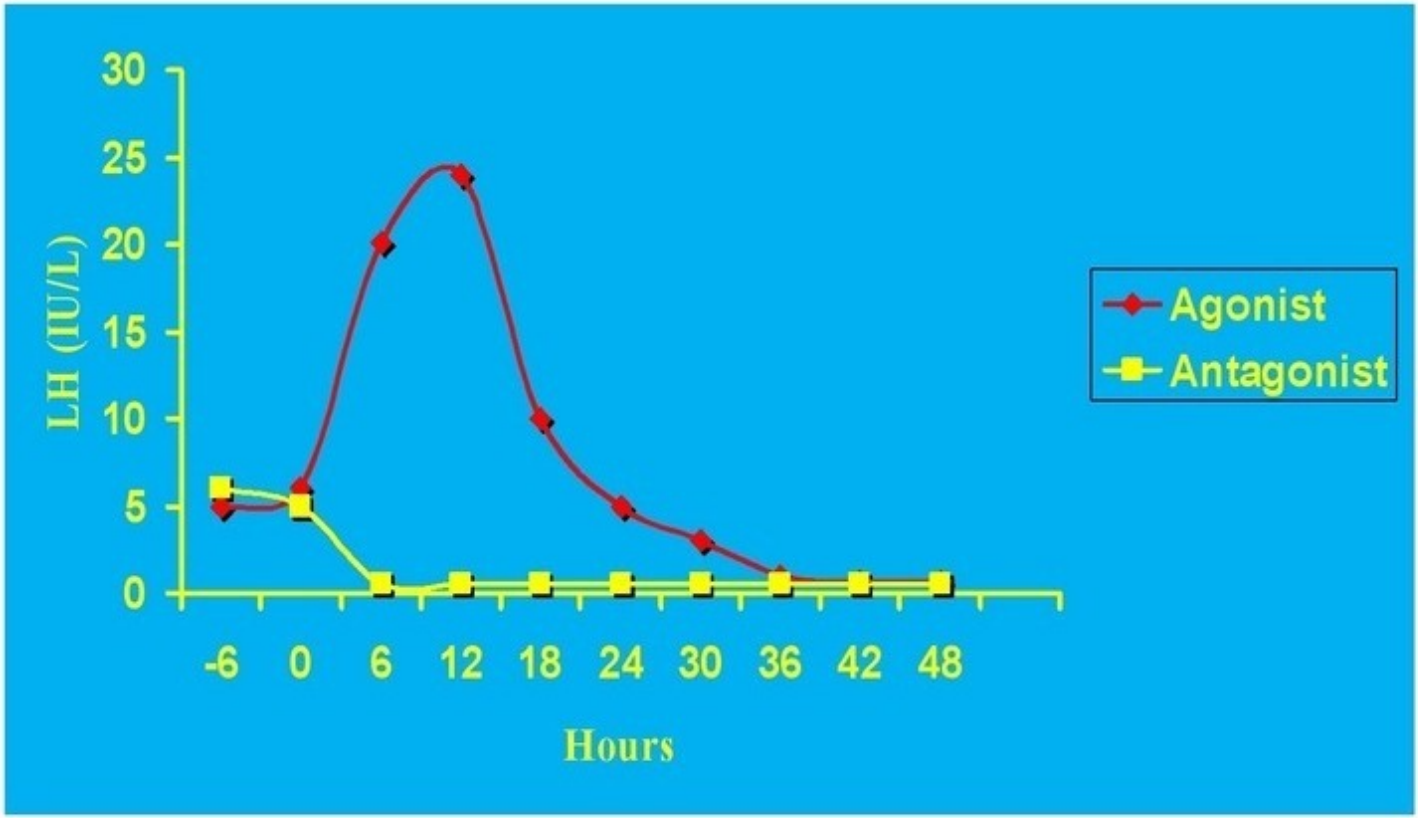
2 types de molécules:

- Agonistes de la GnRH
- Antagonistes de la GnRH

3 types de protocoles de FIV:

- Agonistes de la GnRH → **Protocole Agoniste Long**
- Agonistes de la GnRH → **Protocole Agoniste Court**
- Antagonistes de la GnRH → **Protocole Antagoniste**

Blocage de l'axe hypothalamo-hypophysaire



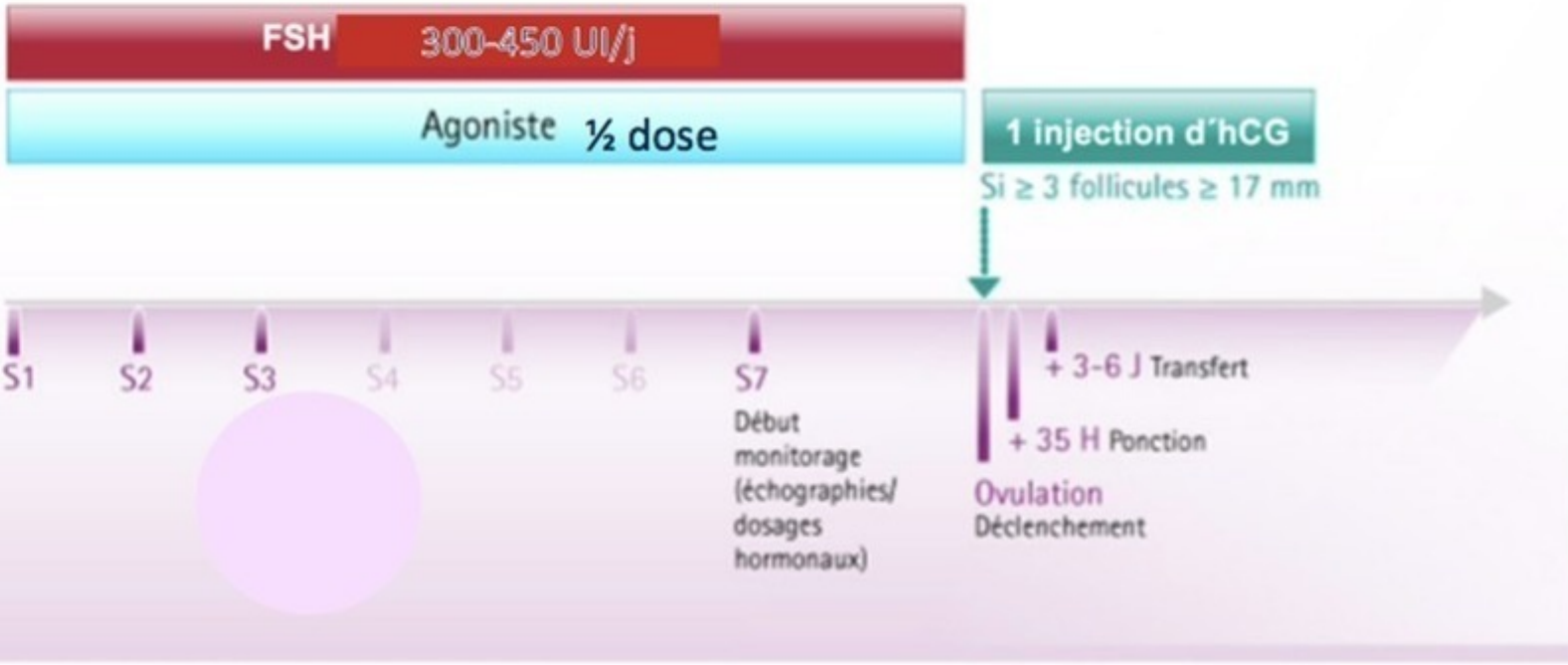
Blocage de l'axe hypothalamo-hypophysaire

Protocole agoniste long

S1 = Début de la stimulation (J2 ou J3 du cycle)

Blocage de l'axe hypothalamo-hypophysaire

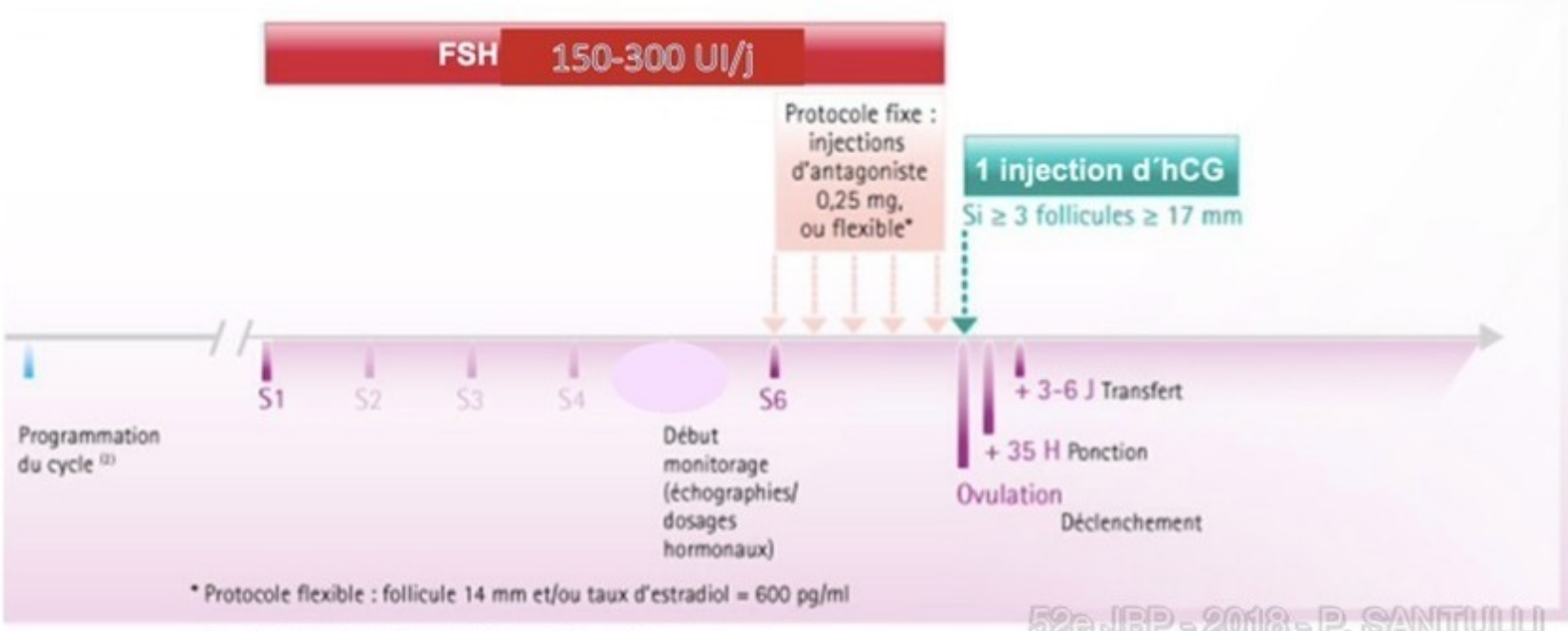
Protocole agoniste court



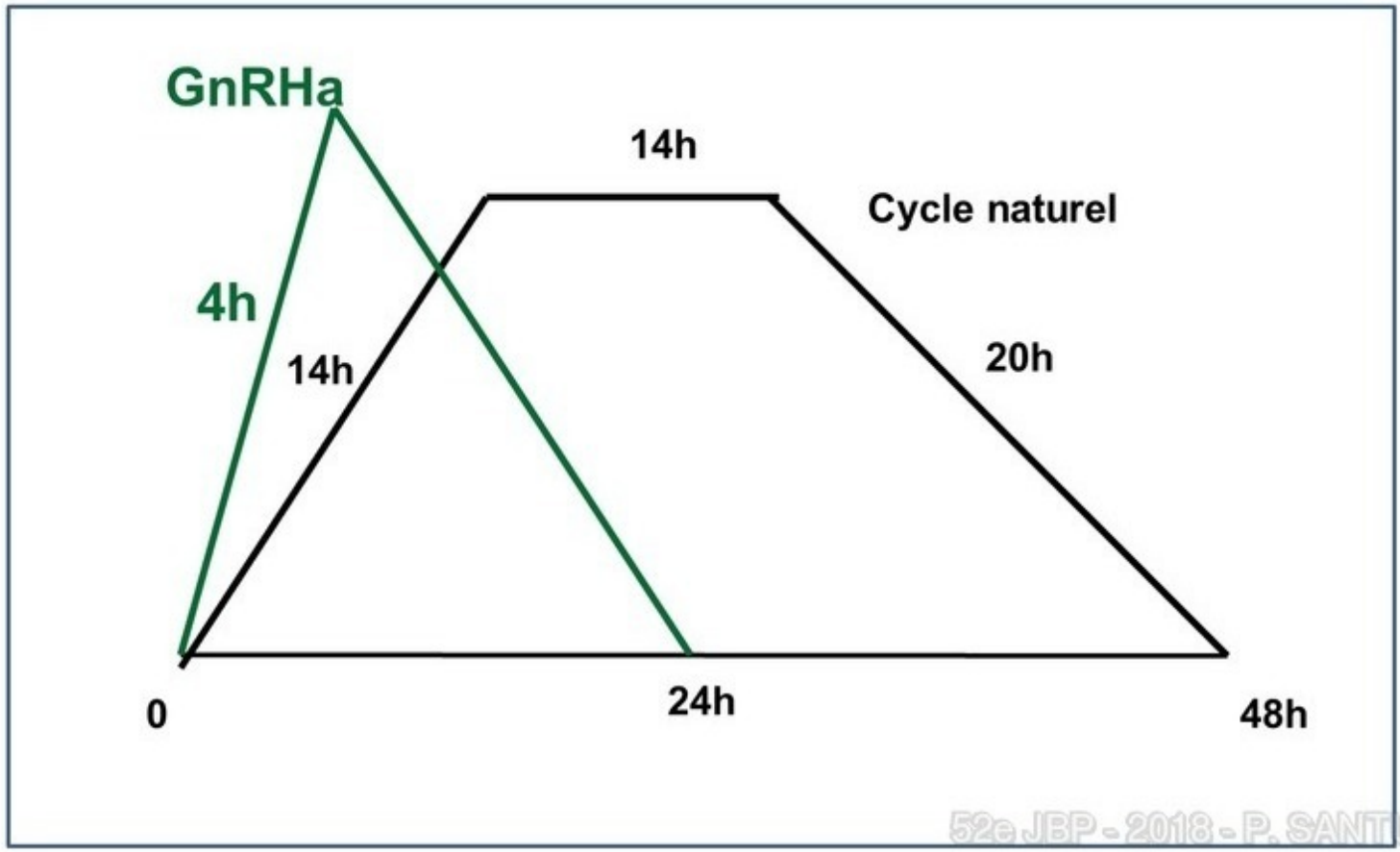
S1 = Début de la stimulation (J2 ou J3 du cycle)

Blocage de l'axe hypothalamo-hypophysaire

Protocole antagoniste



Ovulation - GnRHa



IAD 1

DDR : 12/01/2018	samedi 20/01/2018	dimanche 21/01/2018
IIU(C) - FSH J4	S9	S10
Prescripteur	Dr M...	
Contacté par	BLANCH...	
E2 pg/ml	64	
LH mUI/ml	4.4	
PG ng/ml	0.1	
Echo OVD	12^1 10^1 $7à9^2$ $2à6^6$	
Echo OVG	$7à9^1$ $2à6^8$	
Endomètre	5	
Gonal F 900 (stylo)	50 UI Inj.	50 UI Inj.
Cetrotide 0,25 mg		
Ovitrelle seringue pré remplie		
RDV prise de sang	Sang	
RDV échographie	Echo	

IAD 1

DDR : 12/01/2018	samedi 20/01/2018	dimanche 21/01/2018	lundi 22/01/2018	mardi 23/01/2018	mercredi 24/01/2018	jeudi 25/01/2018	vendredi 26/01/2018	samedi 27/01/2018
IIU(C) - FSH J4	S9	S10	S11	S12	S13	S14	S15	S16
Prescripteur	Dr M...		Dr K...	Dr M...		Dr S...		Dr K...
Contacté par	BLANCH...		CERVAN...	KOUTCH...		BLANCH...		GONNOT...
E2 pg/ml	64		93	84		109		124
LH mUI/ml	4.4		10.4	6.5		3.8		5.3
PG ng/ml	0.1		0.1	0.1		0.1		0.1
Echo OVD	12^1 10^1 $7à9^2$ $2à6^6$		12^1 $2à6^{10}$	12^1		12^1 10^1 $7à9^1$ $2à6^5$		13^1 10^1 $2à6^6$
Echo OVG	$7à9^1$ $2à6^8$		14^1 $7à9^3$	10^2		10^1 $7à9^2$ $2à6^9$		10^1 $2à6^6$
Endomètre	5		5.2	5.2		8		6.9
Gonal F 900 (stylo)	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.
Cetrotide 0,25 mg								
Ovitrelle seringue pré remplie								
RDV prise de sang	Sang		Sang	Sang		Sang		Sang
RDV échographie	Echo		Echo	Echo		Echo		Echo

IAD 1

DDR : 12/01/2018	samedi 20/01/2018	dimanche 21/01/2018	lundi 22/01/2018	mardi 23/01/2018	mercredi 24/01/2018	jeudi 25/01/2018	vendredi 26/01/2018	samedi 27/01/2018	dimanche 28/01/2018	lundi 29/01/2018
IIU(C) - FSH J4	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18
Prescripteur	Dr M...		Dr K...	Dr M...		Dr S...		Dr K...		
Contacté par	BLANCH...		CERVAN...	KOUTCH...		BLANCH...		GONNOT...		CERVAN...
E2 pg/ml	64		93	84		109		124		217
LH mUI/ml	4.4		10.4	6.5		3.8		5.3		9.3
PG ng/ml	0.1		0.1	0.1		0.1		0.1		0.1
Echo OVD	12^1 10^1 $7à9^2$ $2à6^6$		12^1 $2à6^{10}$	12^1		12^1 10^1 $7à9^1$ $2à6^5$		13^1 10^1 $2à6^6$		$17,5^1$
Echo OVG	$7à9^1$ $2à6^8$		14^1 $7à9^3$	10^2		10^1 $7à9^2$ $2à6^9$		10^1 $2à6^6$		
Endomètre	5		5.2	5.2		8		6.9		7.7
Gonal F 900 (stylo)	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	
Cetrotide 0,25 mg										
Ovitrelle seringue pré remplie										0 microgrammes
RDV prise de sang	Sang		Sang	Sang		Sang		Sang		Sang
RDV échographie	Echo		Echo	Echo		Echo		Echo		Echo

IAD 2

DDR : 11/01/2018	mardi 6/01/2018	mercredi 17/01/2018	jeudi 18/01/2018
IIU(C) - FSH J4	S6	S7	S8
Prescripteur			Dr E...
Contacté par			CERVAN...
E2 pg/ml			105
LH mUI/ml			4.2
PG ng/ml			0.1
Echo OVD			13^1
Echo OVG			
Endomètre			5.1
Puregon 600 (stylo)	50 UI Inj.	50 UI Inj.	50 UI Inj.
Cetrotide 0,25 mg			
Ovitrelle seringue pré remplie			
RDV prise de sang			Sang
RDV échographie			Echo
IIU			
Stop Stim			
Commentaire			

IAD 2

DDR : 11/01/2018	mardi 6/01/2018	mercredi 17/01/2018	jeudi 18/01/2018	vendredi 19/01/2018	samedi 20/01/2018	21
IIU(C) - FSH J4	S6	S7	S8	S9	S10	
Prescripteur			Dr E...		Dr M...	
Contacté par			CERVAN...		BLANCH...	
E2 pg/ml			105		159	
LH mUI/ml			4.2		8.4	
PG ng/ml			0.1		0.1	
Echo OVD			13^1		14^1	
Echo OVG						
Endomètre			5.1		5.6	
Puregon 600 (stylo)	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	
Cetrotide 0,25 mg						
Ovitrelle seringue pré remplie						
RDV prise de sang			Sang		Sang	
RDV échographie			Echo		Echo	
IIU						
Stop Stim						
Commentaire						

IAD 2

DDR : 11/01/2018	mardi 6/01/2018	mercredi 17/01/2018	jeudi 18/01/2018	vendredi 19/01/2018	samedi 20/01/2018	dimanche 21/01/2018	lundi 22/01/2018	mardi 23/01/2018
IIU(C) - FSH J4	S6	S7	S8	S9	S10	S11	S12	S13
Prescripteur			Dr E...		Dr M...		Dr K...	
Contacté par			CERVAN...		BLANCH...		GONNOT...	
E2 pg/ml			105		159		508	
LH mUI/ml			4.2		8.4		20.51	
PG ng/ml			0.1		0.1		0.7	
Echo OVD			13^1		14^1		15^1 13^1 $2à6^1$	
Echo OVG							$2à6^5$	
Endomètre			5.1		5.6		7.7	
Puregon 600 (stylo)	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.	50 UI Inj.		
Cetrotide 0,25 mg								
Ovitrelle seringue pré remplie							0 microgrammes 21h00	
RDV prise de sang			Sang		Sang		Sang	
RDV échographie			Echo		Echo		Echo	
IIU								IIU
Stop Stim								
Commentaire							✓	

FIV-ICSI 1

samedi 19/05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lun 28/05
S1	S2	S3	S4	S5	S6	S7	S8	S9	S1
Dr M...				Dr S...					
				CERVAN...					
				1138					
				7.8					
				0.3					
0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.				
225 UI Inj.	225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.				
225 UI Inj.	225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.				
				Sang					

Court

FIV-ICSI 1

samedi 19/05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lun 28/05
S1	S2	S3	S4	S5	S6	S7	S8	S9	S1
Dr M...				Dr S...		Dr B...	Dr S...		
				CERVAN...		BLANCH...	BLANCH...		
				1138		1797	2036		
				7.8		7.3	5.8		
				0.3		0.6	0.8		
						$20+^{2}$ 18^{1} 13^{1} 10^{2}	$20+^{2}$ 17^{1} 14^{2} 12^{1}		
						16^{1} 15^{1} 7à9^{1}	19^{1} 17^{1} 7à9^{2}		
						6	4.8		
0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.			
225 UI Inj.	225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.	150 UI Inj.			
225 UI Inj.	225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.	150 UI Inj.			
							0 microgrammes 21h00		
				Sang		Sang	Sang		
						Echo	Echo		
									Ponct 2 ovo

Court

FIV-ICSI 2

samedi /05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lundi 28/05/20
S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Dr E...					Dr B...		Dr S...		
					BLANCH...		BLANCH...		
300 UI Inj.	300 UI Inj.	300 UI Inj.	225 UI Inj.	225 UI Inj.					
					Sang				

Mardi 29/5

Antago

FIV-ICSI 3

mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lundi 28/05/2018
S6	S7	S8	S9	S10	S11	S12
Dr V...		Dr B...		Dr S...		
CERVAN...		BLANCH...		BLANCH...		
338		1027				
0.7		0.9				
0.4		0.6				
		15^1 14^2 13^2 11^2 7à9^1				
		13^1 12^4 10^1 7à9^2				
		5.7				
0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.	0.5 ampoul... Inj.			
	150 UI Inj.	150 UI Inj.	150 UI Inj.			
225 UI Inj.	75 UI Inj.	75 UI Inj.	75 UI Inj.			
Sang		Sang				
		Echo				

STDR

FIV-ICSI 4

samedi 19/05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lundi 28/05/2018
S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Dr G...					Dr B...		Dr S...		
					BLANCH...		DELCOU...		
150 UI Inj.	150 UI Inj.	150 UI Inj.	112.5 UI Inj.	112.5 UI Inj.					
					Sang				

ANTAGO

FIV-ICSI 5

vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lundi 28/05/2018	mardi 29/05/2018	mercredi 30/05/2018	jeudi 31/05/2018	vendredi 01/06/2018
S8	S9	S10	S11	S12	S13	S14	S15
Dr B...			Dr S...	Dr V...			
BLANCH...			BLANCH...	BLANCH...			
273							
0.5							
0.2							
10^5 7à9^8 2à6^1							
12^1 11^4 $10,5^3$ 10^3							
225 UI Inj.	225 UI Inj.	225 UI Inj.					
1 ampoule(s) Inj.	1 ampoule(s) Inj.	1 ampoule(s) Inj.					
Sang			Sang				
Echo			Echo				

ANTAGO

FIV-ICSI 5

vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018	lundi 28/05/2018	mardi 29/05/2018	mercredi 30/05/2018	jeudi 31/05/2018	vendredi 01/06/2018
S8	S9	S10	S11	S12	S13	S14	S15
Dr B...			Dr S...	Dr V...			
BLANCH...			BLANCH...	BLANCH...			
273			584	781			
0.5			0.5				
0.2			0.8	2.2			
10^5 7à9^8 2à6^1			16^1 14^2 13^2 12^1 10^3 7à9^1 ...	18^1 17^2 16^2 15^3 14^1 13^2 ...			
12^1 11^4 $10,5^3$ 10^3			14^2 13^1 12^1 11^1 10^4 7à9^2 ...	16^2 15^1 14^1 13^1 10^3			
				2 ampoule(s) 21h00			
225 UI Inj.	225 UI Inj.	225 UI Inj.	225 UI Inj.				
1 ampoule(s) Inj.	1 ampoule(s) Inj.	1 ampoule(s) Inj.	1 ampoule(s) Inj.				
Sang			Sang	Sang			
Echo			Echo	Echo			
						Ponct G... 09h00	

Dosage hCG

ANTAGO

FIV-ICSI 6

samedi 19/05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018
S1	S2	S3	S4	S5	S6
Dr K...					Dr B...
					BLANCH...
					1516
					17.1
					0.8
					150 UI Inj.
225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.	
					1 ampoule(s) Inj.
					Sang

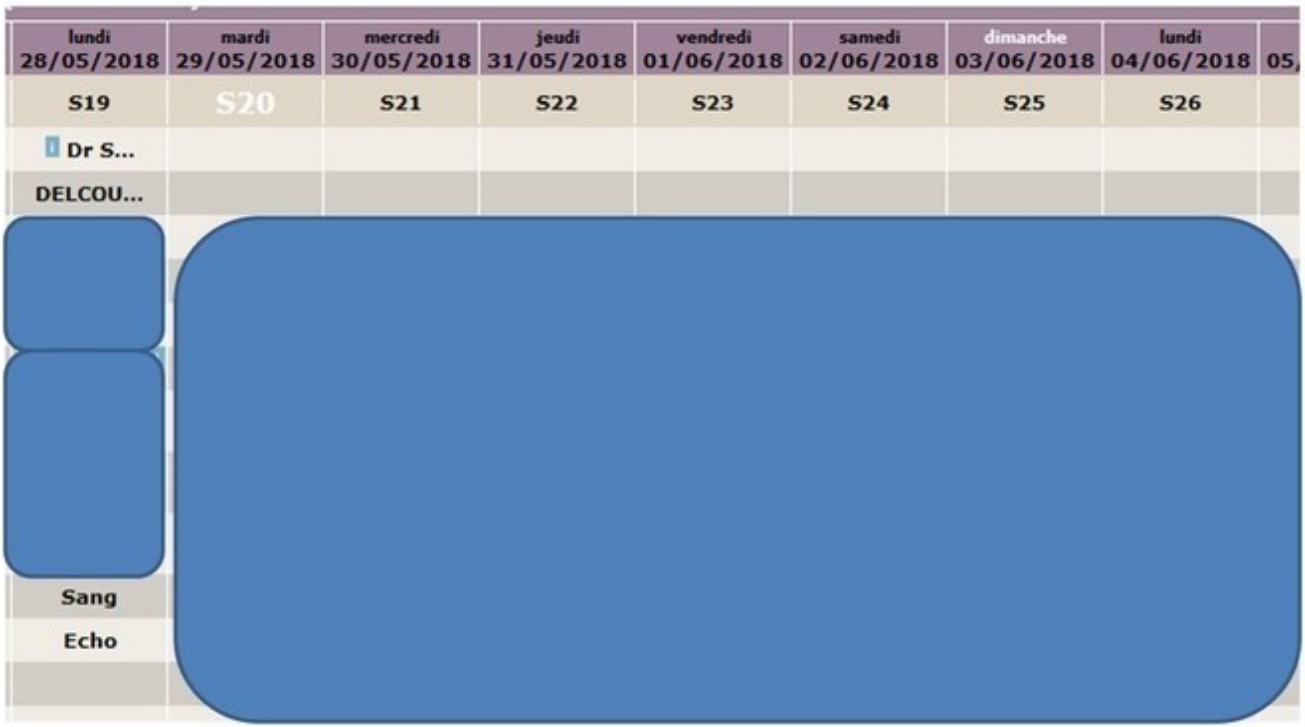
ANTAGO

FIV-ICSI 6

samedi 19/05/2018	dimanche 20/05/2018	lundi 21/05/2018	mardi 22/05/2018	mercredi 23/05/2018	jeudi 24/05/2018	vendredi 25/05/2018	samedi 26/05/2018	dimanche 27/05/2018
S1	S2	S3	S4	S5	S6	S7	S8	S9
Dr K...					Dr B...		Dr S...	
					BLANCH...		BLANCH...	
					1516		1071	
					17.1		1.5	
					0.8		2.2	
							17^1 16^2 11^1 7à9^1	
							$20+^1$ 18^1 15^1 14^1 12^1 2à6^1	
							7.1	
					150 UI Inj.	150 UI Inj.		
225 UI Inj.	225 UI Inj.	225 UI Inj.	150 UI Inj.	150 UI Inj.				
					1 ampoule(s) Inj.	1 ampoule(s) Inj.		
					Sang		Sang	
							Echo	
							Stop Loca	

ANTAGO

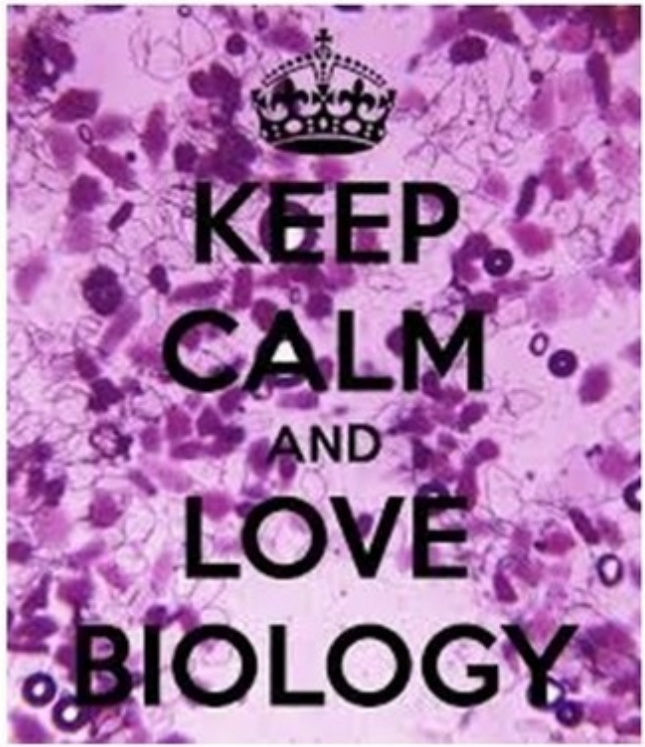
TEC



DT 11,25 fait le 01/3

Conclusion

- 1er bilan d'infertilité le plus complet possible
- Gagner un temps parfois précieux…
- Valeur diagnostique mais aussi pronostique!
- Importance du suivi hormonal rapide en AMP



Gynecology

Surgical unit:

C Chapron, B Borghese, L Marcellin, P Santulli, H Foulot, MC Lafay-Pillet, A Bourret, G Pierre, MC Lamau, P Marzouk, F Decuypere, L Campin

Medical unit:

A Gompel, G Plu-Bureau, L Maitrot; J Hugon, P Sarfati

Reproductive endocrinology unit:

P Santulli, V Gayet, M Bourdon, C Maignien, F Kefelian, S Eskenazi, S Douard, A Marszalek, A Fubini

Intestinal surgery

B Dousset, S Gaujoux, M Leconte

Radiology

AE Millischer, L Maitrot, C Bordonne

Laboratory: Genetic

D Vaiman, F Mondon, S Barbaux

Laboratory: Imunulogy

F Batteux, S Chouzenoux, C Nicco, C Chéreau, B Weill, L Doridot

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JP Wolf, C Patrat, K Pocate, V Lange, JM Kuntzman, C Chalas, A Chargui, AS Gillet

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C Chapron, Professor and Chair, Gynecology Obstetrics II and Reproductive Medicine