ANTIBIOTHERAPIE ANTI-INFLAMMATOIRES ET STERILITE MASCULINE

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SALF DPC LILLE LE 24 01 2018

INFECTION INFERTILITE

- O.M.S. (88) 7966 couples 25 pays 3 % - 12 %
- Clavert (87) 2000 hommes 20 % de sperme infecté
- A priori non en dehors des formes chroniques
- Prévention : traitement adapté - préservatifs

Table 4.2 Percentage distribution of diagnoses of 12,945 patients attending the Institute of Reproductive Medicine of the University of Münster based on the clinical databank Androbase®. 1,446 (=11.2%) of these patients were azoospermic. In the event of several diseases, only the leading diagnosis was included

EAU 2013

Diagnosis	Unselected patients (N = 12.945)	Azoospermic patients (N = 1.446)
All	100%	11.2%
Infertility of known (possible) cause	42.6	42.6
Maldescended testes (current/former)	8.4	17.2
Varicocele	14.8	10.9
Infection	9.3	10.5
Autoantibodies against sperm	3.9	–
Testicular tumor	1.2	2.8
Others	5.0	1.2
Idiopathic infertility	30.0	13.3
Hypogonadism	10.1	16.4
Klinefelter syndrome (47, XXY)	2.6	13.7
XX-male	0.1	0.6
Primary hypogonadism of unknown cause	2.3	0.8
Secondary (hypogonadotropic) hypogonadism	1.6	1.9
Kallmann syndrome	0.3	0.5
Idiopathic hypogonadotropic hypogonadism	0.4	0.4
Residual after pituitary surgery	<0.1	0.3
Others	0.8	0.8
Late-onset hypogonadism	2.2	–
Constitutional delay of puberty	1.4	–
General/systemic disease	2.2	0.5
Cryopreservation due to malignant disease	7.8	12.5
Testicular tumor	5.0	4.3
Lymphoma	1.5	4.6
Leukemia	0.7	2.2
Sarcoma	0.6	0.9
Disturbance of erection/ejaculation	2.4	–
Obstruction	2.2	10.3
Vasectomy	0.9	5.3
Cystic fibrosis, CBAVD	0.5	3.1
Others	0.8	1.9
Gynecomastia	1.5	0.2
Y-chromosomal deletion	0.3	1.6
Other chromosomal aberrations	0.2	1.3
Translocations	0.1	0.3
Others	<0.1	0.3
Others	0.7	1.3

ANTIBIOTHERAPIE

- Actif vis-à-vis du germe
- Diffusion cellulaire et extra cellulaire
- Activité stable
- Diffusion PVE

Tableau 1 : Activité in vitro de quelques antibiotiques utilisables dans le traitement des infections génitales chroniques masculines *[5, 21].*

	Tsu	Thi	Min	Pri	Azi	Ofx
Escherichia coli	+	±	±	-	-	+
Proteus mirabilis	+	±	-	-	-	±
Klebsiella pneumoniae	±	±	±	-	-	±
Enterobacter spp.	±	±	-	-	-	±
Serratia spp.	±	-	-	-	-	±
Staphylococcus sp.	±	±	±	+	+/-[a]	+/-[a]
Entérocoques	-	±	±	±	±	-

Tsu : triméthoprime-sulfaméthoxazole, Thi : thiamphénicol, Min : minocycline, Azi : azithromycine, Ofx : ofloxacine. Espèces habituellement sensibles : +, modérément ou inconstamment sensibles : ±, ou le plus souvent résistantes : -.
[a] Staphylocoques résistants à la méthicilline

Tableau 2 : Diffusion intraprostatique de quelques antibiotiques chez l'homme.

Antibiotiques	Voie adm.	Posologie (g)	Type de prélèvement prostatique	Rapport des concentrations prostate/sérum	Réf.
Triméthoprime	PO	0,32	P, NI	1,1	11
Sulfaméthoxazole	PO	1,60	P, NI	0,1	11
Thiamphénicol	IV	1	P, NI	1,9	11
Azithromycine	PO	0,5	P, NI	>14,8	7
Minocycline	PO	0,2	SP, I	2,5	11
Ofloxacine	IV	0,4	E, NI	2,05 - 3,98	19
Norfloxacine	PO	0,40	P, NI	0,59 - 1,29	4

Voie adm. : voie d'administration (PO : orale, IV : intraveineuse),P : tissu prostatique, NI : patient non infecté, I : patient infecté, SP : sécrétions prostatiques, E : éjaculat.

Tableau 3 : Diffusion intra-prostatique de 4 fluoroquinolones chez le rat après administration par voie sous cutanée d'une dose unique de 20 mg/kg (Le Faou et coll.)

Antibiotiques	Concentrations maximales moyennes		Rapport prostate/sérum[a]
	Prostate (mg/kg)	Sérum (mg/l)	
Ofloxacine	7,9	3,9	3
Tosufloxacine	4,7	0,6	3,6
Témafloxacine	5,5	4,4	1,8
Difloxacine	4,5	4,2	1

[a] : correspond au rapport des aires sous la courbe prostate / sérum (aire sous la courbe = surface délimitée par les axes et la courbe des concentrations en fonction du temps)

A LE FAOU 1996

Human Reproduction Update 1998, Vol. 4, No. 6 pp. 891–903

Seminal tract infections: impact on male fertility and treatment options

Table III. Prevalence of Enterococci and *Escherichia coli* in male infertile patients

References	No. of patients	Enterococci-positive cultures (%)	E.coli-positive cultures (%)	Culture/detection method
Hillier *et al.* (1990)	37	11	<10	5% sheep blood agar
Eggert-Kruse *et al.* (1992)	1000	30.3	7.3	Port-a-cul Universal medium
Balmelli *et al.* (1994)	3196	6.1	1.7	Wilins–Chalgren plate/blood agar plate
Eggert-Kruse *et al.* (1995)	159	41	13	Port-a-cul Universal medium

Table IV. Detection of *Chlamydia trachomatis* in urethral swabs or semen of different patient populations with and without clinical symptoms of seminal tract infection

Reference	Study population	Clinical symptoms	Detection of *C.trachomatis* (%)	Detection method
Grant *et al.* (1985)	STD clinic	Non-gonococcal urethritis	13.6	Cell culture
Cevenini *et al.* (1982)	STD clinic	Non-gonococcal urethritis	32.0	Cell culture
Judson (1981)	Urology dept	Non-gonococcal urethritis	30–50	Cell culture
Luger (1987)	STD clinic	Post-gonococcal urethritis	40	Cell culture
Martin (1990)	Urology dept	Post-gonococcal urethritis	70	Cell culture
Soffer *et al.* (1990)	ART clinic	None	20	Cell culture
Wolff *et al.* (1991)	ART clinic	None	25	Cell culture
Berclaz *et al.* (1993)	ART clinic	None	22	Cell culture

- Adaptée aux germes
- Liposolubles
- Pka 7,4
- Quinolones >Cyclines > Sulfamethoxazole

ANDROLOGIA 35, 331–335 (2003) ACCEPTED: JULY 14, 2003

Antibiotic therapy – rationale and evidence for optimal drug concentrations in prostatic and seminal fluid and in prostatic tissue

Kurt G. Naber[1] and Fritz Sörgel[2]

Table 2. Concentrations in prostatic fluid (adjusted to a dose of 400 mg)

Quinolone	Dose (mg)	Time (h)	Subjects (*n*)	Fluid (mg l^{-1})[a]	Ratio F/P
Norfloxacin	400 PO	1–4	7	0.08	0.10
Ciprofloxacin	400 IV	4	8	0.18	0.20
Enoxacin	400 PO	2–4	10	0.39	0.39
Ofloxacin	400 IV	4	5	0.66	0.33
Fleroxacin	400 PO	2–4	8	1.00	0.28
Gatifloxacin	400 PO	4	7	1.03	1.29
Lomefloxacin	400 PO	4	7	1.38	0.48

Table 3. Concentrations in seminal fluid (adjusted to a dose of 400 mg)

Quinolone	Dose (mg)	Time (h)	Subjects (*n*)	Fluid (mg l^{-1})[a]	Ratio F/P
Gatifloxacin	400 PO	4	8	1.75	1.0
Lomefloxacin	400 PO	4	5	2.03	1.2
Ofloxacin	400 IV	4	6	2.05	4.0
Enoxacin	400 PO	2–4	11	2.19	2.2
Ciprofloxacin	400 IV	4	8	5.06	7.1
Fleroxacin	400 PO	2–4	8	5.80	1.7

[a]Median values.

Modified according to Naber *et al.* (1993a,b, 2001; Naber & Madsen (1999).

ANDROLOGIA 35, 331–335 (2003) ACCEPTED: JULY 14, 2003

Antibiotic therapy – rationale and evidence for optimal drug concentrations in prostatic and seminal fluid and in prostatic tissue

Kurt G. Naber[1] and Fritz Sörgel[2]

Table 4. Concentrations in body fluids 3 h after simultaneous oral administration of 250 mg levofloxacin and 250 mg ciprofloxacin

Body fluid	LEV fluid[a] (mg l^{-1})	CIP fluid[a] (mg l^{-1})	LEV ratio F/P	CIP ratio F/P
Plasma (C_{max})	3.10 (15)[b]	1.37 (15)[b]	–	–
Prostatic fluid	0.89 (8)[b]	0.16 (7)[b]	0.52 (8)[b]	0.30 (6)[b]
Seminal fluid	3.25 (8)	2.59 (8)	1.91 (8)[b]	4.89 (8)[b]
Ejaculate	3.21 (8)	2.63 (8)	1.89 (8)[b]	4.96 (8)[b]
Sperm cells	0.09 (5)	0.08 (5)	0.06 (5)[b]	0.18 (5)[b]

[a]Geometric mean values;
[b]Significantly different ($P > 0.5$).
n, number of volunteers; P, plasma.
Modified according to Bulitta *et al.* (2000).

ANDROLOGIA **29,** 187–192 (1997) ACCEPTED: DECEMBER 19, 1996

Granulocyte elastase indicates silent male genital tract inflammation and appropriate anti-inflammatory treatment

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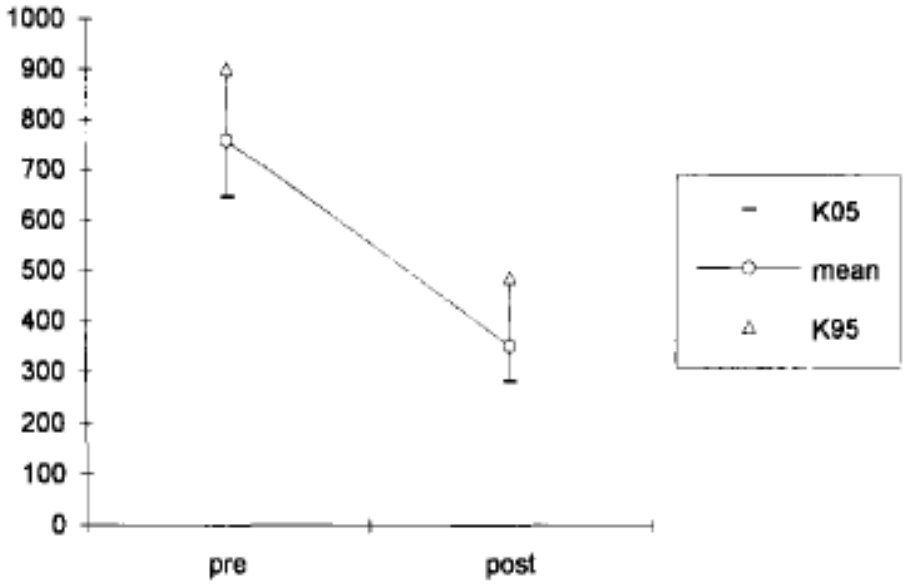
Figure 2. Correlation between elastase level and concentration of l



Elastase ng ml^{-1}	Median	Mean	SD	K 05	K 95
pre	759.5	819.0	463.5	647.0	901.1
post	351.5	546.6	465.2	282.0	487.0

K 05: 2..5%,K95: 95,5% interval for median. $P<<0.001$

Figure 3. Change of elastase concentration in seminal plasma after antibiotic treatment.

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Processing of semen in an antibiotic-rich culture medium to minimize microbial presence during in vitro fertilization*

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Table 1 Microorganisms Isolated From 140 Semen and Corresponding Swim-up Samples

	Semen		Swim-up			Semen		Swim-up			Semen		Swim-up	
Aerobes	No.	%	No.	%	Anaerobes	No.	%	No.	%	Mycoplasmas	No.	%	No.	%
Nonhemolytic streptococci	42	30.0	1	0.7	Mixed anaerobes	4	2.8	—	—	*M. hominis* and *U. urealyticum*	5	3.6	—	—
Staphylococcus epidermidis	40	28.6	3	2.2	*Eikenella* species	4	2.8	—	—	*U. urealyticum*	19	13.6	—	—
Diphtheroids	20	14.3	—	—	Anaerobic streptococci	1	0.7	—	—					
β-hemolytic streptococci	17	12.1	1	0.7	Unidentified anaerobe	1	0.7	—	—					
Streptococcus viridans group	14	10.0	3	2.2										
Escherichia coli	9	6.4	2	1.4										
Proteus species	6	4.3	—	—										
Acinetobacter species	2	1.2	1	0.7										
Klebsiella pneumonia	1	0.7	1	0.7										
Gram-negative bacilli	1	0.7	—	—										
Branhamella catarrhalis	1	0.7	—	—										

Table 1 Adverse Effects of Antibiotics on Spermatogenesis and Spermatozoa

Antibiotic	Species	Dose	Adverse effects on	
			Spermatogenesis	Spermatozoa
Nitrofurans				
Furacin	Rat[6]		Inhibits testicular cell carbohydrate metabolism and oxygen consumption	
	Human[7]		Used to treat germ cell tumors	
Nitrofurantoin	Human[8]	10 mg/kg/d	Temporary spermatogenic arrest; decreased sperm count	Immobilizes spermatozoa at 5 to 10× clinically achievable concentrations
	Rat[9–11]	10 mg/kg/d	Spermatogenic arrest at level of primary spermatocytes	
Furadroxyl	Human[12]		Used to treat germ cell tumors	
Macrolides				
Spiramycin	Rat[9,13,14]	Therapeutic	Spermatogenic arrest	
Erythromycin	Rat[15]	Therapeutic	Decreased frequency of mitotic division in testes	
Tylosin	Rat[15]	Therapeutic	Decreased frequency of mitotic division in testes	
Erythromycin	Human[16]			Impaired motility or spermicidal
Chloramphenicol	Ram[16]			
Tylosin	Bull[16,17]			
Oleandomycin	Rabbit[16]			
Lincomycin	Equine[18]			
Aminoglycosides				
Gentamicin	Human[9]	Therapeutic	Cessation of meiosis at level of primary spermatocytes	
	Rat[9]	Therapeutic	Spermatogenic arrest; cessation of meiosis	
Neomycin	Human[19]	Therapeutic	Adverse effects on sperm concentration, total sperm count and sperm motility	
	Rat[9,19,20]	Therapeutic/ toxic	Decreased index of spermatogenesis; spermatogenic arrest; decreased RNA and DNA content in cells of spermatogenic epithelium	
Framycetin	Rat[9]		Spermatogenic arrest	
Tetracyclines				
Tetracycline HCl	Rat[20]	Therapeutic/ toxic	Slight decrease in spermatogenic index and in RNA content of spermatogenic cells	
Chlortetracycline	Human[16]	100 mcg/mL		Deleterious effects on sperm motility
Minocycline	Bovine[21]	≥50 mcg/mL		Toxic
Sulfa Drugs				
Sulfasalazine	Human[22–25]	Therapeutic	Oligospermia; poor sperm motility, morphological changes	
Co-trimoxazole	Human[26,27]	160 mg/d	Decreased sperm count; decreased sperm motility and morphology	
Penicillins				
Penicillin G, Cephalothin	Rat[9]	Therapeutic	Spermatogenic arrest	
Ampicillin	Chicken[28]	6.2 mcg/mL		Decrease in fertilizing capacity and motility
Dicloxacillin	Bovine[17]	200 mcg/mL		Decrease in sperm motility
Miscellaneous				
Novobiocin	Bovine[17]	>125 mcg/mL		Spermicidal

Schlegel 1991

Assessment on the adverse effects of Aminoglycosides and Flouroquinolone on sperm parameters and male reproductive tissue: A systematic review

Arash Khaki Ph.D.

Table III. Results of comparative study on fluoroquinolones and aminoglycosides on the sperm parameters and AI

Sperm parameters and AI results	Total sperm count No. of sperm/ rat*06	Sperm motility (%)	Sperm viability (%)	Motility % after dilution (0 min)	Motility % after equilibration (240 min)	Post-thawing % motility	Post-thawing detached acrosome %
Control groups	57±0.20	48.4±2.03	79.2±3.40	59±3.2	57±3.3	23.3±1.1	7.3±0.7
Aminoglycosides							
Gentamicin	30±0.260*	18.8±0.85*	40.9±1.08**	Gentamicin(40 µg/ml) 51±4.9 Gentamicin (20 µg/ml) 59±4.3	Gentamicin(40 µg/ml) 42±6.7 Gentamicin (20 µg/ml) 52±6.8	Gentamicin(40 µg/ml) 20±1.3 Gentamicin (20 µg/ml) 21.7±1.1	Gentamicin (40 µg/ml) 8.5±1.1 Gentamicin (20 µg/ml) 11±2.3
Streptomycin	34±0.28*	50.4±1.60	45.6±1.75**	---------	---------	---------	---------
Neomycin	21±0.19*	34.2±0.92*	28.6±1.06**	---------	---------	---------	---------
Comparative results between aminoglycosides	(Streptomycin is with least effect, but Neomycin is with most adverse effect).	(Neomycin has the most adverse effect while Streptomycin has a non-significant adverse effect).	(Neomycin has more adverse effect, but streptomycin has 1less adverse effect)	(High dose of Gentamicin decreased sperm motility)	(Decrease in sperm motility with HD of Gentamicin)	There is no-significant decrease in motility, (No significant differences between HD and LD of Gentamicin and control group)	Acrosomal integrity higher than control group
Fluoroquinolones							
Ofloxacin	12±0.27*	48.6±1.80	23.3±1.27**	---------	---------	---------	---------
Ciprofloxacin				(400 µg/ml) 59±4.5 (200 µg/ml) 60±4.6 No marked changes were seen	(400 µg/ml) 57±5.3 (200 µg/ml) 56±6.5 No significant changes with HD and LD	(400 µg/ml) 38.3±5.9*** (200 µg/ml) 28.3±1.1*** Significant increase in motility with HD and LD	(400 µg/ml) 9.6±1.7 (200 µg/ml) 9±0.8 Acrosomal integrity higher than control group
Comparative results between aminoglycosides and fluoroquinolones	Ofloxacin has more detrimental effect, but streptomycin has less adverse effect	Gentamicin has more adverse effect; No significant changes were seenwith ofloxacinand gentamycin	Ofloxacin has more adverse effect, but streptomycin has less adverse effect	High dose of Gentamicin should be avoided	High dose of Gentamicin should be avoided	The highest sperm motility for HD of Ciprofloxacin and then LD of Ciprofloxacin rather than control group***	Nearly similar effect on acrosomal integrity
References	23	23	23	24	24	24	24

* Significant difference compared with controls ($p<0.05$) ** Significant difference compared with controls ($p<0.001$)

*** Significant difference compared with controls ($p<0.01$)

Table I. Histo-pathological and sperm parameters changes reported with Fluoroquinolones

Fluoroquinolones	Histopathological and biochemical effects	The effects on the sperm parameters and spermatogenesis	Reference
Ciprofloxacin	• Sperm cell toxicity • Inhibition cell growth	Reduction in sperm motility, production and count*	8
	• Apoptosis in certain eukaryotic cells by mitochondrial pathway	Reduced sperm count and motility*	9
	• Decrease in testicular LDH-X activity * • Significant decrease in diameter of the seminiferous tubule * • Significantly increased in vein diameter* • Significant decrease in testis, epididymis and seminal vesicle weight*	Declined sperm viability**	11
	• Hyperchromatin nuclei of spermatocyt I and sertoli cells and myoid • Vacuolation of mitochondria of spermatogonia and spermatocyts cells increasing the thickness of spermatid tail	Decrease in the number of spermatogenic cells in seminiferous tubules*	14
	• Marked decrease in fertility index and testicular weight, • Dense PAS reaction in Leydig cell* • Decreased numbers of Leydig cellsof connective tissue* • Higher numbers of lipid-positive Leydig cells, spermatogonia andspermatocyte cells per ST* • Significantly higher numbers of Leydig cells/mm2 with ALP-positive areas* • Higher numbers of ALP-positive per streptomycin * • Significantly decreased testosterone level* • Significantly decreased serum levels of FSH, LH in high dose-treated animals*	Apoptosis in spermatogonia and spermatocytes by TUNEL method	15
	• Significantly decreased testosterone and increased sperm primordial cells time-dependently* • Decrease in testis weigh dependent on time in male guinea pig*	Decrease in the number of spermatogonia and spermatocyte cells (PAS reaction)*	16
	• Decreased testicular weight dependent on both dose and time(HD)* • Increased n sperm debris dependent on time and dose* • Increased sperm morphology changes time-and dose-dependently*	Higher numbers of spermatogonia and spermatocyte cells per ST*	17
	• Significant decrease in SOD (Unit/ mgprotein)* • Significant decrease in GST (Unit/ gtissue), GPX (Unit/ gtissue) and SOD (Unit/ gtissue)*	Decreased sperm motility time-dependently*	18
	• Significant decrease in the number and percentage of oocytes, fertilized oocytes, embryos (blastocysts) and arrest type I, Arrest type II, and Arrest type III with HD and LD dose of CPFX** • Significant decrease in embryo two cell with HD** • Significant increase in Groups Positive Acridine Orange staining (%) and Positive Aniline Blue staining (%) (DNA integrity and chromatin quality) in HD and LD*; with significant decrease between HD and LD in Positive Aniline Blue staining*	Decreased sperm count time-and dose- dependently*	20
Perfloxacin	• decrease in testicular LDH-X activity * • increased sperm primordial cells time-dependently*	Reduction in sperm motility, count and production*	9
	• decrease in testis weigh dependent on time in male guinea pig* • decrease in body weight in long-time treatment*	Reduction in sperm motility, count and production*	16
Ofloxacin	• significant increase in total serum acid phosphatase activity* decrease in testicular LDH-X activity *	Reduction in sperm motility, count and production *	9
	• decrease in body weight in long time treatment with both high and low doses* • decrease in absolute testis weight (g) in long time treatment with both low and low doses* • significant decrease in testosterone level, Curve linear velocity, Linear velocity, Linearity index and Sperm normal forms with high dose in long time*	Decreased sperm count and motility in long time for both high and low doses*	10
Enrofloxacin	• Cytoplasmic vacuolation of Sertoli cells impaired spermatogenesis • Nearly complete spermatogenic arrest disorganization and sloughing of germ cells and morphological abnormalities	Decreased sperm motility	12

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Systematic review

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Systematic review

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Table IV. The effects of aminoglycosides (gentamicin) on male reproductive tissue and sperm parameters

Histopathological effect	Aminoglycosides (gentamicin)	Reference
Testis weight	High dose of GS decrease testis weight significantly*	25
Seminal vesicle weight	Significant decrease in long time treatment for any dosage of Gentamicin *	25
DSP (Daily sperm production)*10^6	Significant decrease in high dose of Gentamicin *	25
Daily abnormal spermatid production *10^6	Significant decrease with any dose(HD and LD) and duration treatment of Gentamicin	25
Sperm count (×10^6)	Significant decrease for any dose of Gentamicin related to duration treatment	25
Sperm motility (%)	Significant decrease with high dose of Gentamicin and long-time treatment*	25
Sperm abnormality (%)	Significant decrease with high dose of Gentamicin and long-time treatment* STR has significant high percentage of sperm head defect*	25, 30
STD(Seminiferous tubule diameter)	Significant decrease with high dose of Gentamicin time-independently*	25
SE(Seminiferous epithelial height)	Significant decrease with high dose of Gentamicin time-independently *	25
CESR (×10)	Significant decrease with gentamicin*	27, 28
Serum testosterone	Significant decrease with gentamicin*	27
LH level	Significant decrease with gentamicin*	28
MDA	Significant increase with gentamicin**	28
Sperm motility, count, and viability	Significant decrease with gentamicin**	28
SOD and catalase level	Significant decrease with gentamicin**	28
On day 3 and 4 after semen storage	Greater motility and velocity in addition of gentamicin at 15c* No significant effect on stored semen at 5c	31
Sperm motility and velocity	Decrease sperm motility and velocity after addition of gentamicin to extender* No improvement of sperm motility induced by bacteria	32

Urol Clin N Am 29 (2002) 965–973

Common medications and drugs: how they affect male fertility

David M. Nudell, MD, Mara M. Monoski, Larry I. Lipshultz, MD*

Table 2
Negative effects of medications on male fertility

Medication	Gonadotoxic	Altered HPG axis	Decreased libido	Erectile dysfunction	Fertilization potential
Antibiotics					
Nitrofurantoin	+	+	…	…	…
Erythromycin	+	…	…	…	…
Tetracyclines	…	…	…	…	+
Gentamycin	+	…	…	…	…

J. Reprod. Fert. (1988) 82, 353–364

Pharmacokinetics of non-steroidal anti-inflammatory drug in male rabbits after acute and chronic administration and effect of chronic treatment on seminal prostaglandins, sperm quality and fertility

W. Löscher*, H. Lüttgenau, W. Schlegel† and S. Krüger†

Table 2. Effect of subacute treatment with phenylbutazone on various semen parameters of male rabbits

Measure	Day of the trial	Control trial	Phenylbutazone trial
PGE-2 (ng/ml)	3	9·1 (2·6–15)	6·7 (0–23)
	9	11 (2·5–37)	3·3 (1·8–5·3)***
PGF-2α (ng/ml)	3	5·3 (2·0–8·1)	0·7 (0·3–1·6)***
	9	6·6 (2·4–15·3)	1·5 (0·6–3·3)***
Ejaculate volume (ml)	3	0·39 (0·1–0·7)	0·5 (0·3–0·7)**
	8	0·36 (0·2–0·55)	0·48 (0·3–0·7)*
	9	0·42 (0·2–0·95)	0·55 (0·35–1·0)
Sperm density ($\times 10^{-6}$/mm^3)	8	0·18 (0·02–0·48)	0·24 (0·05–0·76)
	9	0·23 (0·06–0·45)	0·10 (0·03–0·17)*
Total sperm count ($\times 10^{-6}$/ejaculate)	8	66 (9–233)	108 (19–227)
	9	83 (19–180)	56 (9–93)
Sperm motility			
Motile spermatozoa (%)	8	80 (65–90)	80 (50–90)
	9	71 (55–90)	71 (60–90)
Quality of motility (score)	8	2·8 (0–5)	3·9 (2–5)
	9	2·0 (0–5)	2·6 (0–5)
Sperm viability (%)	8	72 (36–93)	73 (54–90)
	9	Not determined	74 (48–89)

Correlation of leukocytospermia with clinical infection and the positive effect of antiinflammatory treatment on semen quality

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TABLE 2

Semen characteristics from 12 patients before and after treatment with a Cox-2 inhibitor.

Characteristic	Before treatment	After treatment	*P*
Sperm concentration (10^6/mL)	22.5 (7.5–39.8)	48.0 (45.8–80.0)	.02
Normal morphology (%)	20.0 (15.8–27.3)	36.0 (14.5–51.0)	.266
Motile sperm (%)	28.0 (12.0–32.8)	33.5 (13.8–42.0)	.178
Leukocyte concentration (10^6/mL)	5.5 (3.3–6.8)	1.0 (0.3–2.0)	.001

Note: Data are median and 25th–75th quartiles and Mann-Whitney *U* test.

Lackner. Leukocytospermia and antiinflammatory treatment. Fertil Steril 2006.

INFECTIONS AIGUES

- Urétrites
- Prostatites
- Orchiépididymites

LES URETRITES

- L'urétrite : inflammation de l'urètre et des glandes péri-urétrales par des micro-organismes transmis par voie sexuelle

- Fréquence diminuée en raison prévention des MST: 0,1 urétrite / mois

- Gonoccoque(10%-20%)
  Chlaemydiae Trachomatis(30%-50%) et associé au
  Gonoccoque dans 20%
  Uréaplasma Uréaliticum,Trichomonas Vaginalis (5%-10%) seuls ou associés

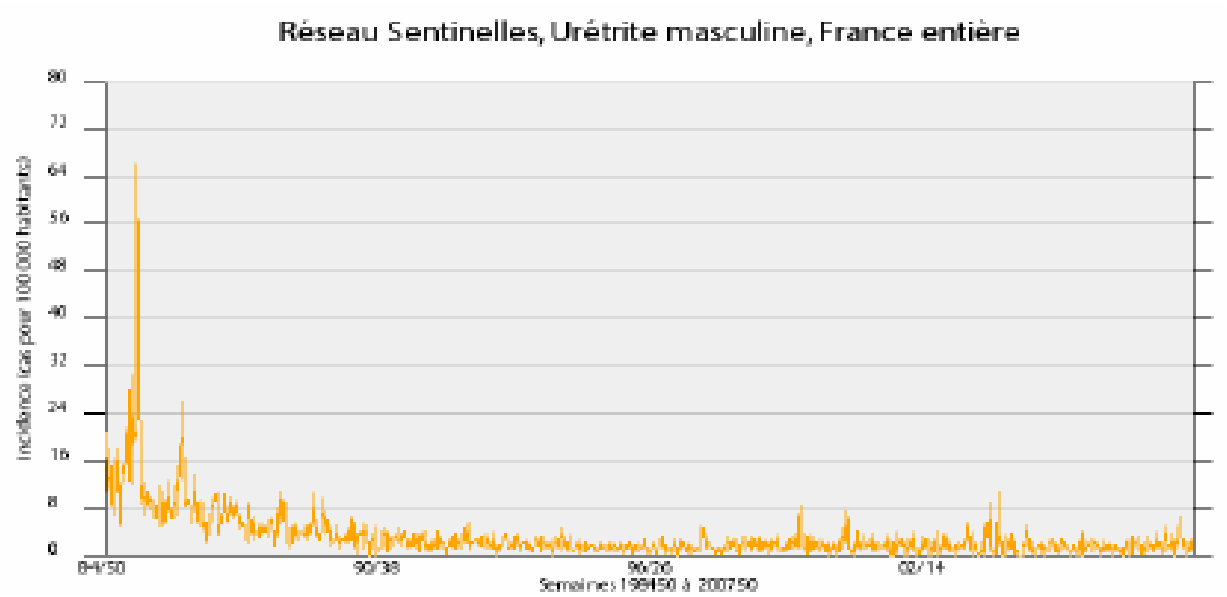


Figure 3. Evolution de l'incidence hebdomadaire des urétrites masculine vues en médecine générale entre 1984 et 2007, réseau Sentinelles.

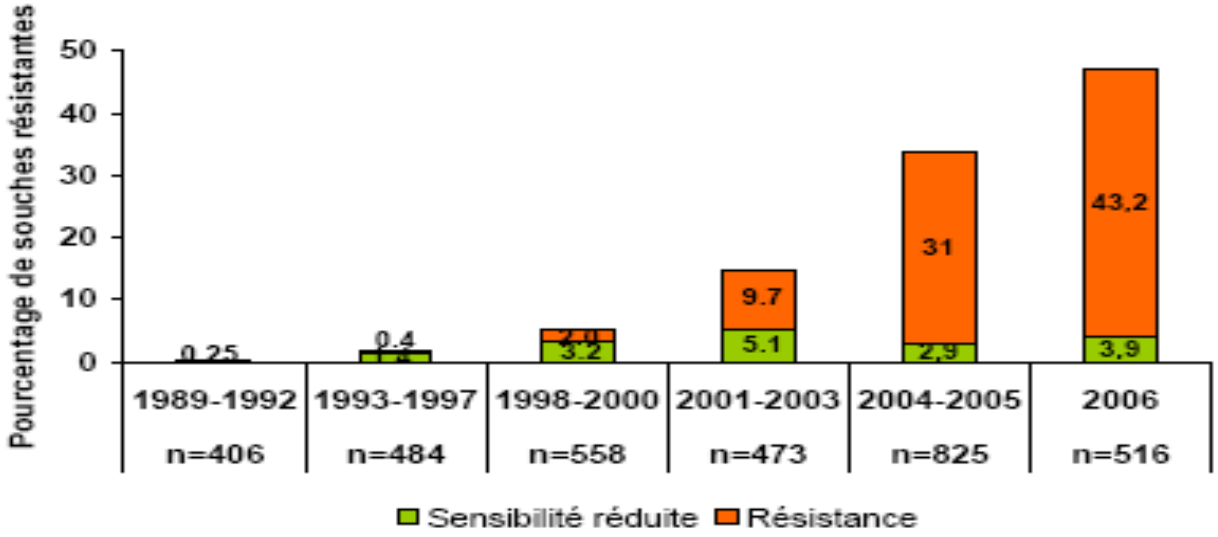


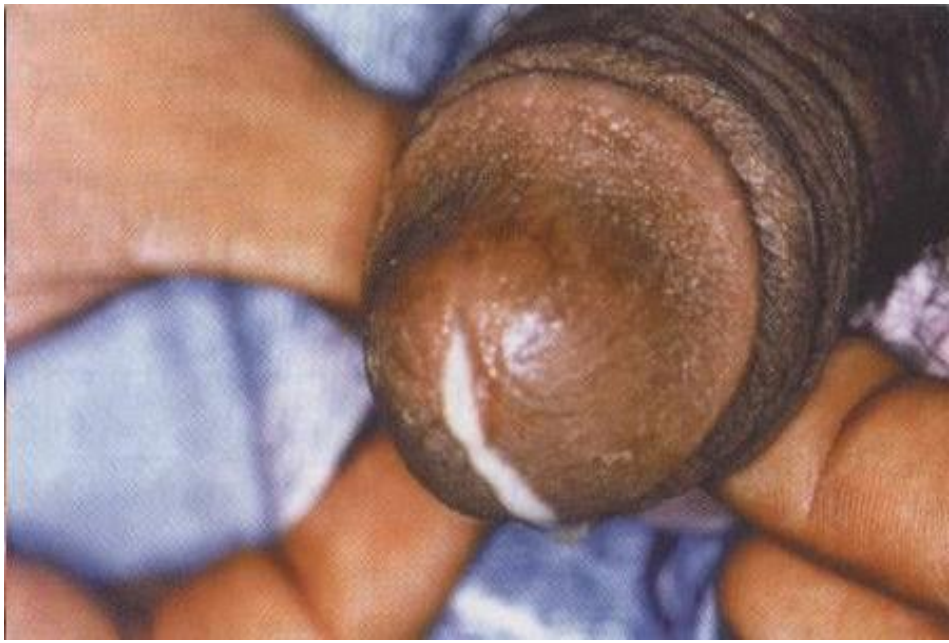
Figure 2. Evolution de la résistance à la ciprofloxacine des gonocoques, réseau de surveillance Renago, France, 1989-2006.

CLINIQUE

- Écoulement urétral en dehors des mictions, brûlures mictionnelles, prurit canalaire

- Apyrexie sinon rechercher forme compliquée (prostatite,orchi-épididymite)

- Rechercher de principe des localisations pharyngées ou ano-rectales souvent asymptomatiques



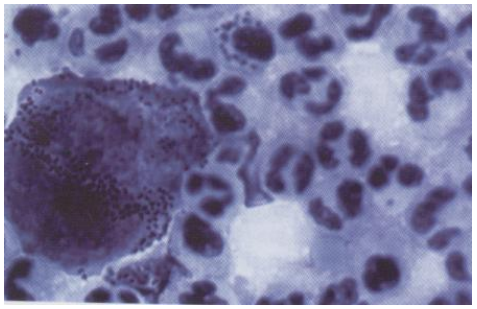
CLINIQUE / GERMES

- N Gonorrhoeae :
- Incubation courte(<5 jrs)
- Très symptomatique (tache les sous-vêtements)
- Purulent 60%, clair 30%, absent 10% mais chaude-pisse
- Portage pharyngé

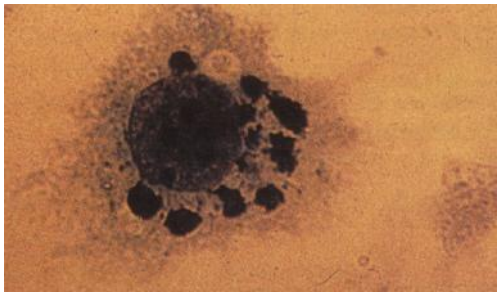
- C.Trachomatis :
- 50%-80%asymptomatique
- Si symptomatique incubation 10-15 jrs, forme sub-aigue, écoulement clair 20%-60%, purulent 15%-30%,dysurie, prurit urétral

PRELEVEMENTS ADAPTES

- NG:
- Écouvillonnage de l ‘ écoulement ou endo-urétral ?
- PCR,sérologie,1er jet
- Chez homosexuel prélèvement pharyngé et anal



- C.T:
- PCR,.. sur le 1er jet 2h après la dernière miction Sen 90% Spe 90%
- Les diagnostics rapides Sen faible 25%
- Sérodiagnostic inutile si urétrite non compliquée



TRAITEMENTS

- Attention aux résistances de N.G aux quinolones
- Traitement probabiliste après le prélèvement
- Concernent tous les partenaires sexuels jusqu’à 2 mois avant le diagnostic

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9.6.1 ***Treatment of gonorrhoeal urethritis***

The following guidelines for therapy comply with the recommendations of the US Centers for Disease Control and Prevention (8-10). The following antimicrobials can be recommended for the treatment of gonorrhoea:

As first-choice treatment

- ceftriaxone, 1 g intramuscularly (with local anaesthetic) as a single dose;
- azithromycin, 1 g orally as a single dose.

Alternative regimens

- ciprofloxacin, 500 mg orally as single dose;
- ofloxacin, 400 mg orally as single dose;
- levofloxacin, 250 mg orally as single dose.

EAU 2014

CHLAEMYDIAE TRACHOMATIS

As first choice of treatment:	**LE**	**GR**
azithromycin, 1 g orally as single dose	1b	A
doxycycline, 100 mg orally twice daily for 7 days	1b	A
As second choice of treatment:		
erythromycin base, 500 mg orally four times daily for 14 days	1b	A
erythromycin ethylsuccinate, 800 mg orally four times daily for 7 days		
ofloxacin, 300 mg orally twice daily for 7 days	1b	A
levofloxacin, 500 mg orally once daily for 7 days		

REMARQUES

- Cefixime : 80 à100 % efficacité CI si allergie vraie bonne diffusion pharyngée

- Fluoroquinolones :

  Ciprofloxacine(Uniflox) en 2ème intention efficacité 80% diffusion pharyngée

  Ofloxacine

- Cyclines : doxycline référence sur CT

- Macrolides : alternative à doxycycline

CONSEILS

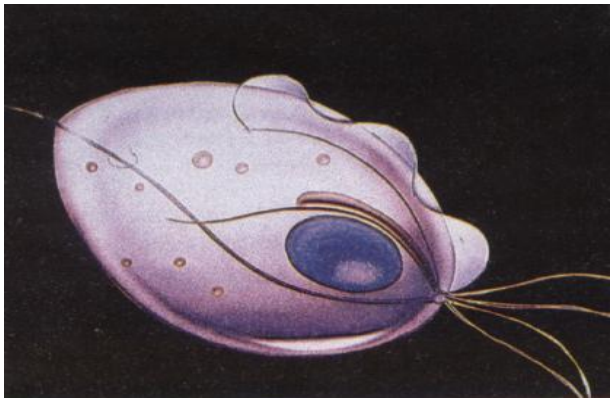
- Favoriser abstinence jusque 7 jours après le début du traitement
- Maladies non immunisantes
- Information/Prévention
- Informer sur le risque VIH, HEPATITES
- Vérifier vaccination hépatite B
- Déclaration obligatoire : NG
- Répétition des cultures après traitement ?

LES AUTRES GERMES

- TV :

  Examen direct sinon mise en culture

  Metronidazole Flagyl 2g en 1prise ou 250mg x2 / jr /10jrs en association avec Cyclines contre CT



- UU :

  Macrolides ou Cyclines

LES PROSTATITES

- Inflammation aigue d’origine microbienne de la glande prostatique
- Toute infection de l’appareil génito-urinaire masculin a une potentialité d’atteinte prostatique
- Sinon par contamination directe (B P)
- A défaut la voie hématogène
- Avec des facteurs favorisants : diabète,immuno-suppression, dysfonction vésicale, malformations

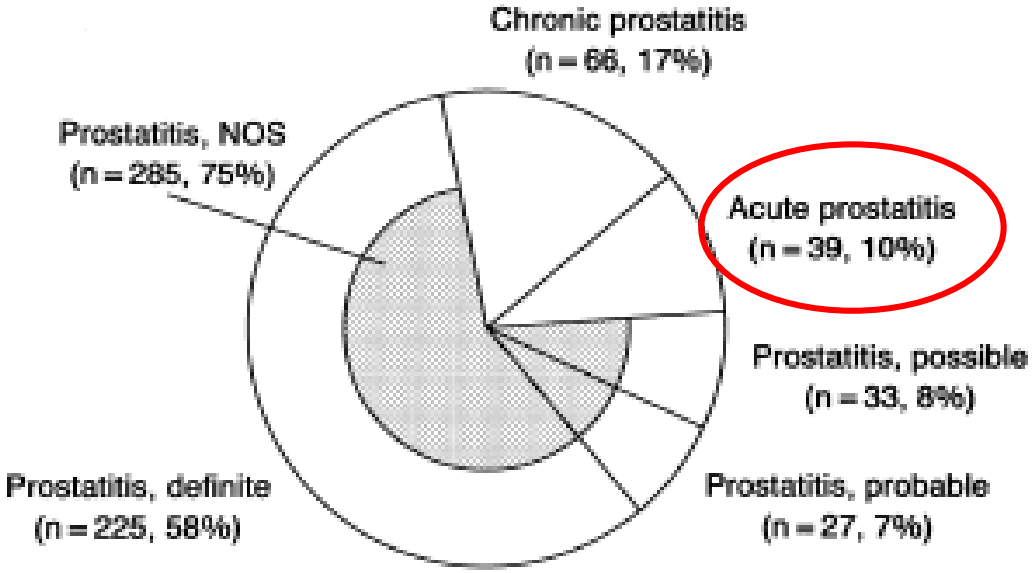


FIGURE 1. *Diagnoses rendered by physicians for the 390 episodes of prostatitis in the medical records at the date of last follow-up. The shaded area represents prostatitis not otherwise specified (NOS), which comprises diagnoses not explicitly stated as acute or chronic prostatitis in the medical record but stated as probable prostatitis, possible prostatitis, or merely as "prostatitis."*

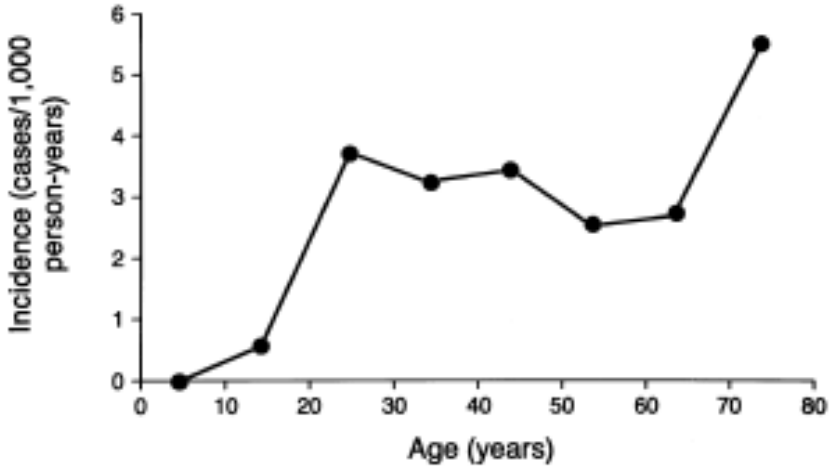


FIGURE 2. *Age-specific incidence rates of acute prostatitis or prostatitis not otherwise specified (NOS) at the date of last follow-up according to the Olmsted County Study of Urinary Symptoms and Health Status Among Men, 1989 to 1990.*

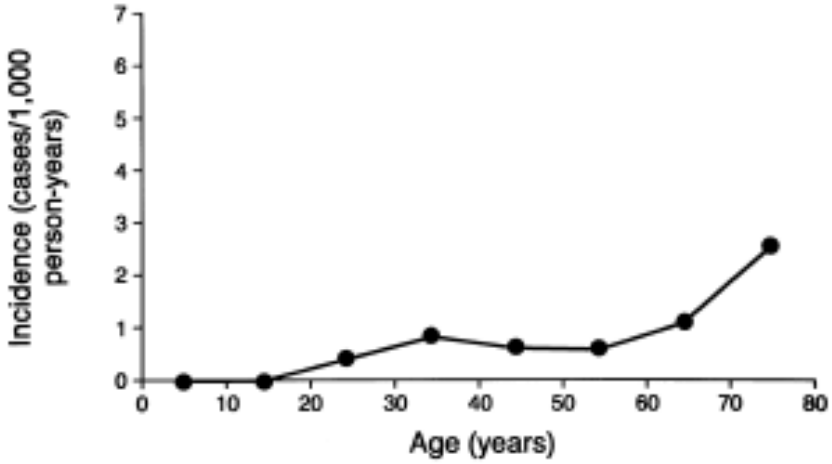


FIGURE 3. *Age-specific incidence rates of an explicit diagnosis of chronic prostatitis at the date of last follow-up according to the Olmsted County Study of Urinary Symptoms and Health Status Among Men, 1989 to 1990.*

CLINIQUE

- Syndrome infectieux :fièvre,syndrome grippal…
- Symptômes urinaires : brûlures mictionnelles,pollakiurie, dysurie
- Douleurs pelviennes, périnéales, urétrales
- Toucher rectal douloureux
- Rechercher épididymite, orchite
- Parfois symptomatologie atypique…….

TABLE II. *Symptoms by physician diagnosis of prostatitis for duration of medical record**

Symptoms	Physican Diagnosis†			
	Prostatitis NOS‡			
	Definite (n=196) [No. (%)]	Possible/Probable (n=57) [No. (%)]	Acute Prostatitis (n=37) [No. (%)]	Chronic Prostatitis (n=49) [No. (%)]
Frequency	61 (31%)	23 (40%)	19 (51%)	49 (33%)
Urgency	25 (13%)	7 (12%)	8 (22%)	10 (20%)
Dysuria	76 (39%)	25 (44%)	20 (54%)	14 (29%)
Hesitancy	15 (8%)	4 (7%)	2 (5%)	4 (8%)
Straining	1 (1%)	0	0	1 (2%)
Weak stream	28 (14%)	11 (19%)	6 (16%)	6 (12%)
Nocturia	37 (19%)	15 (26%)	2 (5%)	8 (16%)
Hematuria	12 (6%)	9 (16%)	4 (11%)	3 (6%)
Dribbling	12 (6%)	5 (9%)	3 (8%)	3 (6%)
Urethral discharge	32 (16%)	7 (12%)	4 (11%)	6 (12%)
Urinary retention	3 (2%)	0	0	0
Hematospermia	5 (3%)	2 (4%)	0	2 (4%)
Fever/chills‡	37 (19%)	10 (18%)	18 (49%)	3 (6%)
Myalgia	12 (6%)	3 (5%)	6 (16%)	47 (4%)
Pain				
Perineal/groin	23 (12%)	12 (21%)	2 (5%)	4 (8%)
Suprapubic	33 (17%)	12 (21%)	8 (22%)	9 (18%)
Lower back	23 (12%)	9 (16%)	8 (22%)	9 (18%)
Penile	16 (8%)	3 (5%)	5 (14%)	1 (2%)
Scrotal/testicular	22 (11%)	9 (16%)	4 (11%)	10 (20%)
Rectal	51 (26%)	19 (33%)	15 (41%)	11 (22%)
Ejaculatory pain	4 (2%)	0	0	2 (4%)

ETAPE CLINIQUE

- Recherche de symptômes et signes de PBA
- Appréciation de la gravité
- Recherche de facteurs de risques ou de complications comme la rétention vésicale
- Appréciation de l’évolution sous traitement

ETAPES BIOLOGIQUE/RADIOLOGIQUE

- Confirmation par ECBU
- Appréciation de la gravité : NFS, hyperleucocytose ou leucopénie
- Si doute NFS, CRP +/- hémoculture. La normalisation de la CRP critère d ’efficacité thérapeutique
- Recherche de facteurs de complications : glycémie, créatinémie
- PSA non recommandé : 60 % augmenté
- Recherche d’une rétention vésicale par échographie post-mictionnelle par voie SUS-PUBIENNE : dans les 24 H, en urgence si signes de gravité ou évolution anormale
- Recherche pyélonéphrite par échographie +/-scanner
- Si aggravation de l’état septique ou persistance au delà de 72H /échographie prostatique par voie sus-pubienne ou endo-rectale, scanner rénal à la recherche d’un abcès prostatique, voire d’une pyélonéphrite associée

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Table 10.4: Most common pathogens in prostatitis

Aetiologically recognised pathogens*
E. coli
Klebsiella sp.
Prot. mirabilis
Enterococcus faecalis
P. aeruginosa
Organisms of debatable significance
Staphylococci
Streptococci
Corynebacterium sp.
C. trachomatis
U. urealyticum
Myc. hominis

*Adapted from Weidner et al. (3) and Schneider et al. (14).

P.B.A SIMPLE

- Antibiothérapie probabiliste : fluoroquinolone systémique par voie orale

  si C.I C3G
- Antibiothérapie relais en fonction antibiogramme ECBU
- Durée : 3 à 6 semaines
- Pas de traitement préventif des partenaires si germes uro-pathogènes

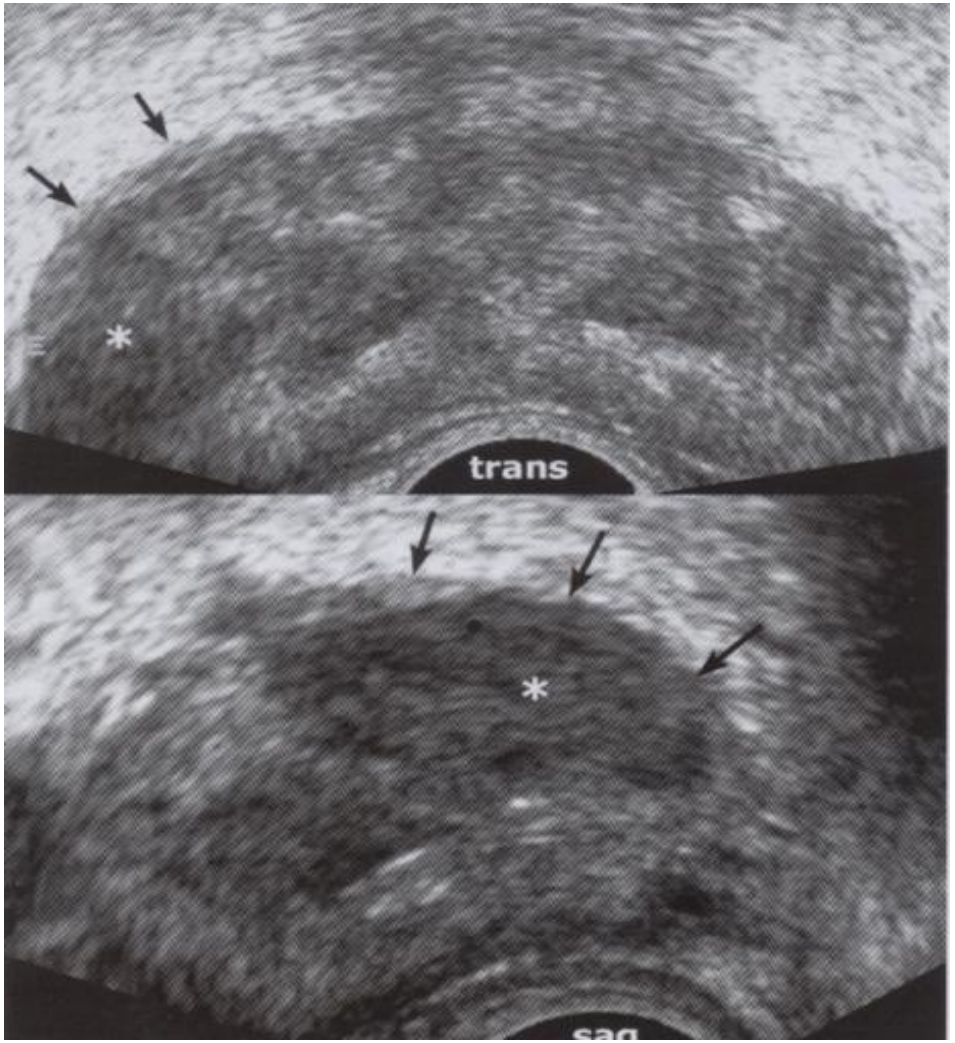

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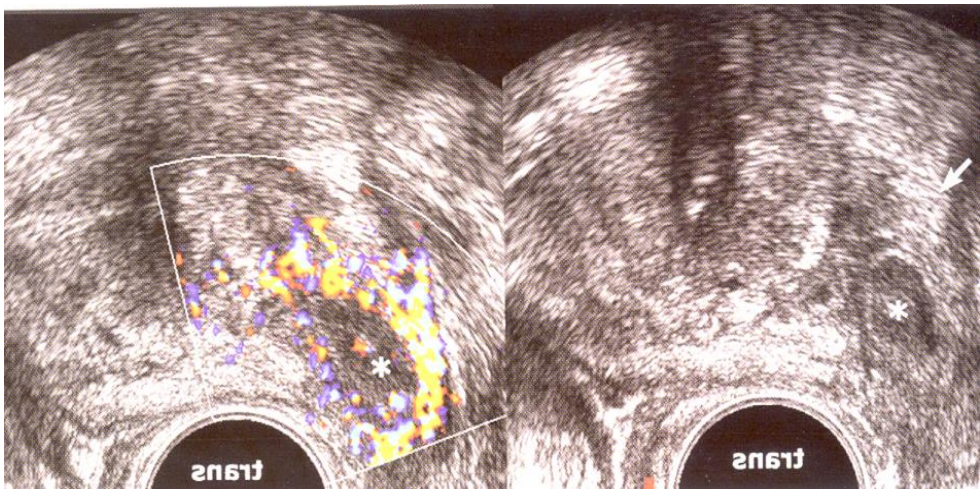
Table 10.5: Antibiotics in chronic bacterial prostatitis*

Antibiotic	Advantages	Disadvantages	Recommendation
Fluoroquinolones	Favourable pharmacokinetics	Depending on the substance:	Recommend
	Excellent penetration into the prostate	Drug interaction	
	Good bioavailability	Phototoxicity	
	Equivalent oral and parenteral pharmacokinetics (depending on the substance)	Central nervous system adverse events	
	Good activity against typical and atypical pathogens and *P. aeruginosa*		
	In general, good safety profile		
Trimethoprim	Good penetration into prostate	No activity against *Pseudomonas*, some enterococci and some Enterobacteriaceae	Consider
	Oral and parenteral forms available		
	Relatively cheap		
	Monitoring unnecessary		
	Active against most relevant pathogens		
Tetracyclines	Cheap	No activity against *P. Aeruginosa*	Reserve for special indications
	Oral and parenteral forms available	Unreliable activity against coagulase-negative staphylococci, *E. coli*, other Enterobacteriaceae, and enterococci	
	Good activity against *Chlamydia* and *Mycoplasma*	Contraindicated in renal and liver failure	
		Risk of skin sensitisation	
Macrolides	Reasonably active against Gram-positive bacteria	Minimal supporting data from clinical trials	Reserve for special indications
	Active against Chlamydia	Unreliable activity against Gram-negative bacteria	
	Good penetration into prostate		
	Relatively non-toxic		

**Adapted from Bjerklund Johansen et al. (21).*

P.A COMPLIQUEE

- Si rétention complète : drainage par voie sus-pubienne
- Antibiothérapie probabiliste : bithérapie aminoside+C3g inj ou fluoroqinolone inj /p.o selon les situations
- Antibiothérapie de relais après 72h selon l'antibiogramme de ECBU
- Durée : 3 à 6 semaines



SUIVI

- Réévaluation du traitement à 48-72heures
- ECBU de contrôle 1 et 4 à 6 semaines après l'arrêt du traitement
- Si persistance ou aggravation des signes cliniques : nouvelle évaluation avec recherche abcès prostatique en vue drainage percutané
- Bilan à distance de l'épisode aigu

EPIDYDIMITES AIGUES

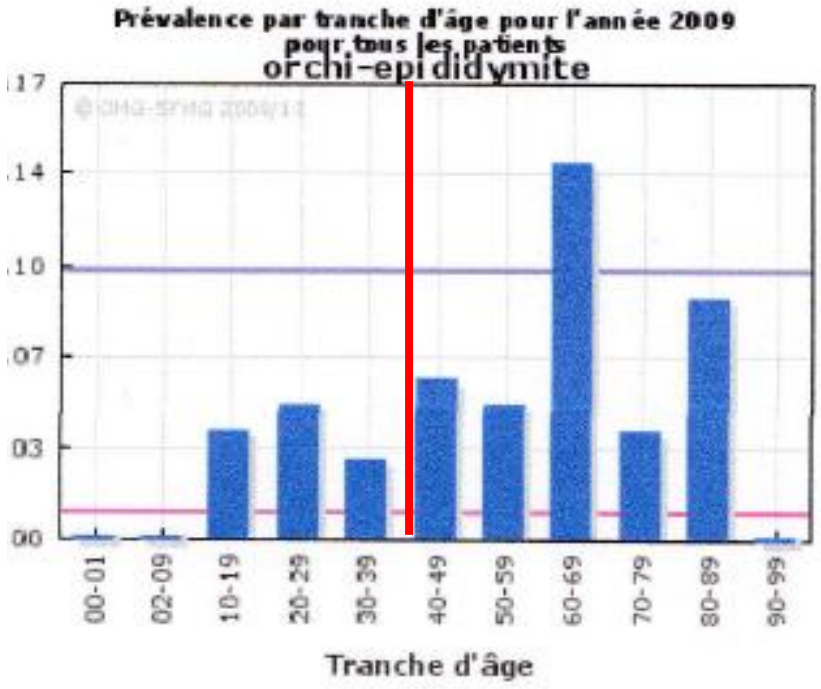
- Prévalence :observatoire de médecine générale

Données générales

Répartition des patients par tranche d'âge

Répartition des actes par tranche d'âge

	Nbe total	Par médecin	
		Moyenne	Bornes interquartile (Q25 ; Médiane ; Q75)
Patients	36	0.7	(0 ; 0 ; 0)
Actes	49	1.0	(0 ; 0 ; 0)



EPIDYMITES AIGUES EN UROLOGIE

BERTRAND P 1992

- 14% des entrées en urgences (108 cas)
- Age moyen 39ans 8 mois
- 3% bilatérales
- 73% fébriles
- 41 % signes urinaires
- 23 % TR douloureux
- ECBU normal 40 % leucocyturie 41 %

G+29 E coli 31% dont 24 % après 50ans

Chlamydiae 27 % avant 40 ans

ECHOGRAPHIE GENITALE

ECHOGRAPHIE SCROTALE 44 % atteinte testiculaire

ECHOGRAPHIE PROSTATIQUE 86 cas			
	> 40 ans	<40 ans	total
normale	34%	52%	44%
hyperechogène	6%	2%	4%
adénome	29%	0%	12%
inflammation	31%	46%	40%

Table 2. Comparison of negative and positive urine culture groups' patient characteristics

Variable	Negative urine culture group	Positive urine culture group	p value
Patient number*	45 (69.2)	20 (30.8)	>0.05
Mean age (years)†	45	36	0.224†
Maximal BT (℃)†	37.3	37.7	>0.05
Sexual history*	13 (28.9)	19 (95.0)	0.012†
Scrotal pain & tenderness			
Mild*	36 (80.0)	6 (30.0)	>0.05
Severe*	9 (20.0)	14 (70.0)	0.348†
Scrotal erythema*	45 (100)	19 (95.0)	>0.05
Urethral discharge*	5 (11.1)	18 (90.0)	>0.05
Dysuria*	10 (22.2)	12 (60.0)	>0.05
Epididymal head size ≥2 cm*	10 (22.2)	13 (65.5)	0.288†
Number WBC on urinalysis			
1~10*	40	0	>0.05
10~40*	5	8	>0.05
Many*	0	12	>0.05

Table 1. Bacterial species detected in men with acute epididymitis

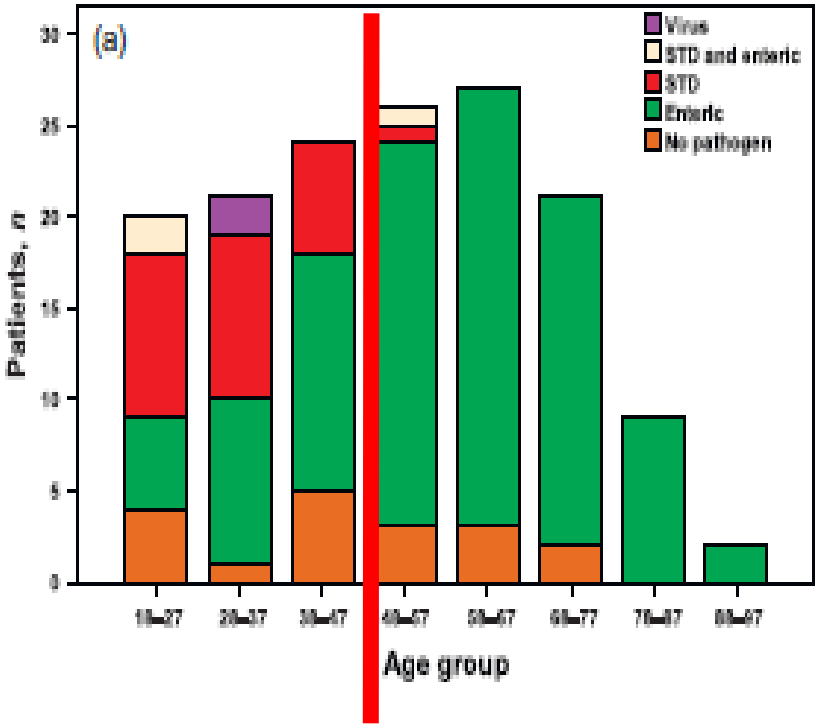
Bacterial species	Total number of patients	Age	
		≤40 yr	>40 yr
C. trachomatis	9 (13.8)	8 (12.3)	1 (1.5)
N. gonorrhoeae	4 (6.2)	3 (4.6)	1 (1.5)
E. coli	2 (3.1)	1 (1.5)	1 (1.5)
S. aureus	2 (3.1)	0 (0.0)	2 (3.1)
S. epididymis	2 (3.1)	1 (1.5)	1 (1.5)
E. faecalis	1 (1.5)	0 (0.0)	1 (1.5)

Values are presented as number (%)

KIM SD 2013

Table 2 – Pathogen spectrum

	Naive	Pretreated
Bacterial culture in all patients	n = 150	n = 87
Escherichia coli, n	79	11
Enterococcus spp, n	6	4
Pseudomonas spp, n	6	4
Klebsiella spp, n	4	1
Staphylococcus aureus, n	2	1
Citrobacter spp, n	2	0
Serratia marcescens, n	2	0
Proteus spp, n	1	1
Morganella spp, n	1	0
Staphylococcus epidermidis, n	0	2
Patients with positive culture, n	96	21*
STI-PCR in all sexually active patients	n = 89	n = 48
Chlamydia trachomatis, n	20	5
Mycoplasma spp, n	7	1
Neisseria gonorrhoeae, n	2	4
Sexually active patients with positive STI, n	28	9†
Patients with negative culture and negative STI-PCR, n	29	57
16S rDNA analysis in culture- and STI-negative patients	n = 29	n = 57
Escherichia coli, n	0	8
Proteus spp, n	0	2
Staphylococcus epidermidis, n	0	1
Aerococcus spp, n	0	1
Propionibacterium spp, n	0	1
Haemophilus spp, n	5	1
Lactobacillus spp, n	2	0
Bacteroides spp, n	1	0
Eubacterium spp, n	1	0
Patients with positive 16S rDNA analysis, n	9	14†
Viral analysis in patients without bacterial pathogen	n = 20	n = 43
Enterovirus, n	2	0



40 ANS

PILATZ A 2015

L'ECHOGRAPHIE TESTICULAIRE

- Testicule remanié, hétérogène
- Épididyme hétérogène , + vascularisé

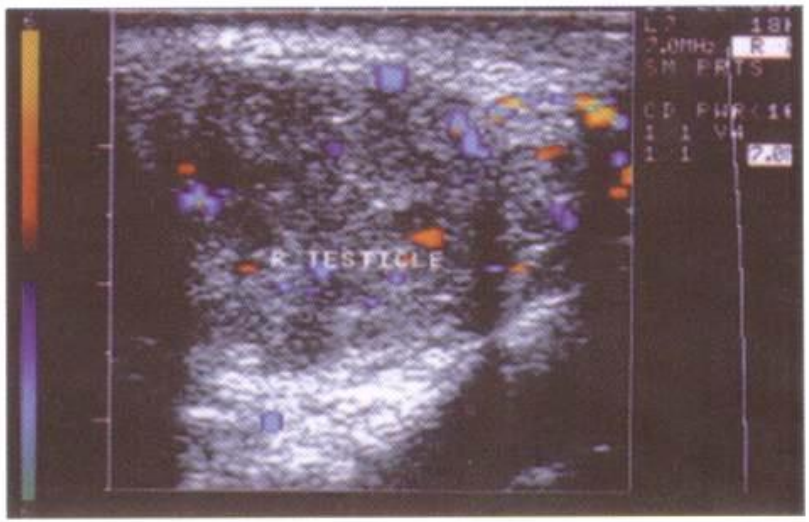


Fig 77a : Orchite chronique (DC). Gros testicule hétérogène, à contours irréguliers, relativement peu vascularisé. Présentation aspécifique correspondant dans ce cas à une orchite chronique micro-abcédée. Le diagnostic différentiel avec un processus infiltratif tumoral est quasi impossible.

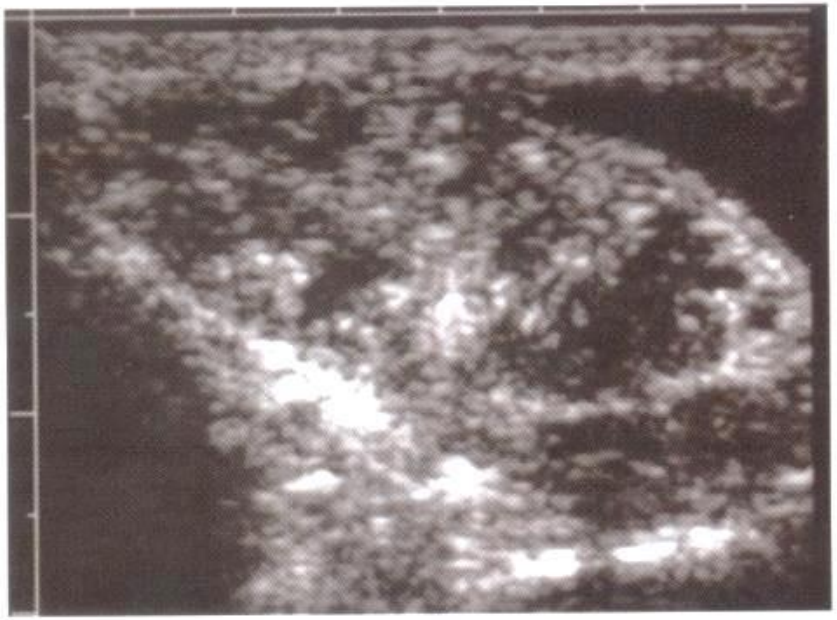


Fig 75a : Epididymite chronique (NB) : la tête épididymaire est hétérogène et épaissie.

TRAITEMENT

- Le traitement idéal est représenté par les fluoroquinolones, de préférence celles avec une activité dirigée contre Chlamydia trachomatis
- ofloxacine 400 mg par jour ou lévofloxacine 500 mg par jour par voie orale.
- Si Chlamydia trachomatis est identifié le traitement peut se poursuivre avec des tétracyclines doxycycline 200 mg par jour.
- La durée du traitement est de 2 semaines minimum avec un maximum de 6 semaines en cas de prostatite associée

EAU 2014

Only a few studies have measured the penetration of antimicrobial agents into the epididymis and testes in humans. Of these, the fluoroquinolones have shown favourable properties (9) (LE: 2a).

Antimicrobials should be selected on the empirical basis that in young, sexually active men, *C. trachomatis* is usually causative, and that in older men, with BPH or other micturition disturbances, the most common uropathogens are involved. Studies that have compared microbiological results from puncture of the epididymis and from urethral swabs as well as urine have shown very good correlation. Therefore, before antimicrobial therapy, a urethral swab and MSU should be obtained for microbiological investigation (GR: C).

Again, fluoroquinolones, preferably those with activity against *C. trachomatis* (e.g. ofloxacin and levofloxacin), should be the drugs of first choice, because of their broad antibacterial spectra and their favourable penetration into the tissues of the urogenital tract. If *C. trachomatis* has been detected as an aetiological agent, treatment could also be continued with doxycycline, 200 mg/day, for at least 2 weeks. Macrolides may be used as alternative agents (GR: C).

Supportive therapy includes bed rest, up-positioning of the testes and antiphlogistic therapy. In young men, epididymitis can lead to permanent occlusion of the epididymal ducts and thus to infertility, therefore, one should consider antiphlogistic therapy with methylprednisolone, 40 mg/day, and reduce the dose by half every second day (GR: C).

In case of *C. trachomatis* epididymitis, the sexual partner should also be treated (GR: C). If uropathogens are found as causative agents, a thorough search for micturition disturbances should be carried out to prevent relapse (GR: C). Abscess-forming epididymitis or orchitis also needs surgical treatment. Chronic epididymitis can sometimes be the first clinical manifestation of urogenital tuberculosis.

CONCLUSIONS

- Episodes aigues :clinique ok mais problème du diagnostic de l'atteinte des voies génitales pour un traitement de durée adaptée

- Episodes chroniques :symptomatologie riche mais quid du diagnostic du lieu d'atteinte

- Inflammation : le sperme est le lieu de rencontre des fluides des glandes annexes le diagnostic de localisation est difficile pour un traitement spécifique façon spécifique

- Azoospermie : aspect de l'épididyme

LES INFECTIONS CHRONIQUES

3 situations

* épididymite chronique
* prostatite chronique
* infections du sperme

DIAGNOSTIC / IGAM / ORIGINE ?

- OATS +
  - 1 facteur A + 1 facteur B
  - 1 facteur A + 1 facteur C
  - 1 facteur B + 1 facteur C
  - 2 facteurs C

WHO manual for the standardized investigation and diagnosis of the infertile couple (Rowe et al., 1993)

Facteurs du groupe A	**Facteurs du groupe B (après massage prostatique)**	**Facteurs du groupe C**
ATCD infection urinaire et/ou IST et/ou epididymite	Fluide prostatique anormal	Culture spermatique (bactério significative)
Épididyme épaissi et/ou douloureux et/ou déférent sensible et/ou anomalies au TR	Urines anormales	Hypospermie et/ou viscosité augmentée et/ou anomalie du pH séminal et/ou perturbations de la biochimie séminale
		Leucospermie

INFECTION DU SPERME

- Leucospermie > 10^{6}/ml
- Bactériospermie > 10^{3}/ml
- Rapport nbre de leucocytes/spz
  * Berger (82) tx > 1/100 : x 8,7
  * Shy (88) tx > 6/100 : x 4

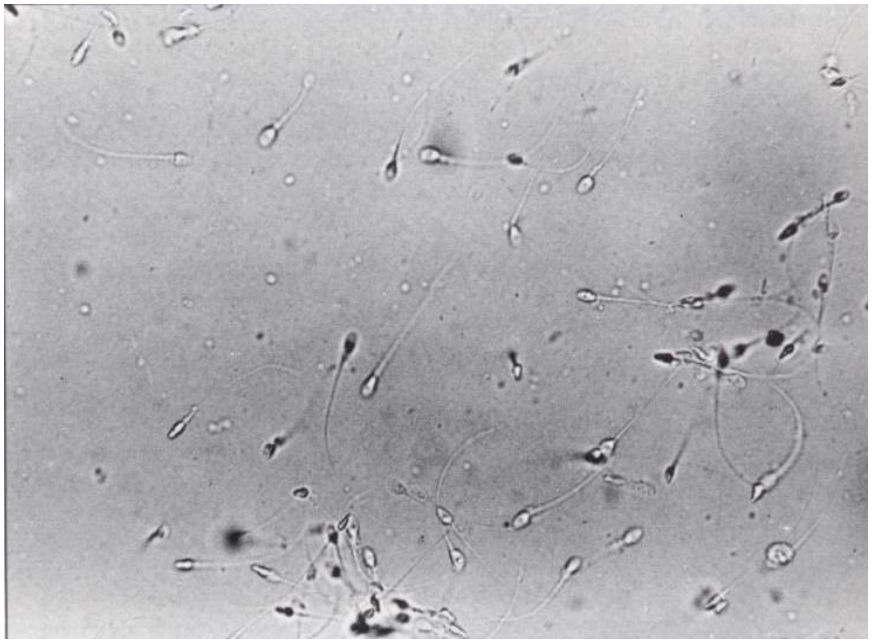
PRELEVEMENT DU SPERME SPERMOCULTURE

- Si pas d’autre argument : la répéter
- Insister sur les conditions de réalisation - Kim (99) : diminution de 50 % des faux positifs

TEST DE HUNHER

- J. Belaisch (99) : pas le mot infection

- Eggert Kruse (92) : pas de corrélation si pas de signes cliniques



PROBLEMES

- Définition large qui nécessite des critères stricts - sinon ?
- Quelle est la place de l'échographie ?

EPIDYMITES CHRONIQUES

- Prévalence : JC NICKEL 2005

TABLE II. *Prevalence, demographics, and symptom assessment of patients presenting to urologists in outpatient practice*

	n	Age (yr)	Duration (yr)	Symptom Index	Score
Prostatitis					
Men	166 (2.7)	50 (22–83)	3.1 (0.1–33)	CPSI	19.7 (0–40)
Interstitial cystitis					
Total	242 (2.8)	50.2 (18–86)	4.5 (0.1–75)	OSSI	11.8 (0–20)
				OSPI	10.5 (0–16)
Women	211 (7.9)	49.4 (18–86)	4.2 (0.1–33)	OSSI	11.8 (0–20)
				OSPI	10.6 (0–16)
Men	26 (0.4)	55.1 (27–83)	6.6 (0.1–75)	OSSI	11.4 (0–20)
				OSPI	9.8 (1–16)
Epididymitis					
Men	57 (0.9)	41.1 (18–78)	2.5 (0.08–20)	CESI	15.5 (3–27)

Key: CPSI = National Institutes of Health Chronic Prostatitis Symptom Index; OSSI = O'Leary-Sant Severity Index; OSPI = O'Leary-Sant Problem Index; CESI = Chronic Epididymitis Symptom Index.
Data in parentheses are percentages or range.

TABLE III. *Most common investigations and treatments previously performed, used, prescribed, or planned during the 2-week audit period*

	Prostatitis	Interstitial Cystitis	Epididymitis
Investigations	Urinalysis (67)	Urinalysis (64)	Urinalysis (65)
	Urine cultures (64)	Urine cultures (57)	Urine cultures (65)
	Cystoscopy (49)	Cystoscopy (48)	Cystoscopy (47)
	Ultrasound (26)	Ultrasound (24)	Ultrasound (25)
	Urodynamics (19)	Urodynamics (19)	Urodynamics (23)
Treatments	Antibiotics (74)	Antibiotics (73)	Antibiotics (75)
	Alpha-blockers (28)	Anti-inflammatories (24)	Anti-inflammatories (40)
	Anti-inflammatories (25)	Anticholinergics (22)	Anticholinergics (32)
	Pentosan polysulfate (20)	Pentosan polysulfate (18)	Pentosan polysulfate (23)
	Anti-anxiolytics (20)	Intravesical treatment (13)	Anti-anxiolytics (21)

Data in parentheses are percentages.

QUEL MECANISME ?

- Fibrose canalaire
- Altération de la fonction testiculaire
- Réponse inflammatoire
- Réponse immunitaire

SPERME ET EPIDYMITE CHRONIQUE

ALTERATION DES PARAMETRES SPERMATIQUES

Numération ⬇
Mobilité ⬇
Morphologie ⬆
Anomalies du flagelle ⬆
Altération DNA ⬆
Leucocytes ⬆
Elastase ⬆
α-Glucosidase ⬇

HAIDI G 2008

IMPACT INFLAMMATION ET FERTILITE

Table III. Prevalence of Enterococci and *Escherichia coli* in male infertile patients

References	No. of patients	Enterococci-positive cultures (%)	E.coli-positive cultures (%)	Culture/detection method
Hillier *et al.* (1990)	37	11	<10	5% sheep blood agar
Eggert-Kruse *et al.* (1992)	1000	30.3	7.3	Port-a-cul Universal medium
Balmelli *et al.* (1994)	3196	6.1	1.7	Wilins–Chalgren plate/blood agar plate
Eggert-Kruse *et al.* (1995)	159	41	13	Port-a-cul Universal medium

Table IV. Detection of *Chlamydia trachomatis* in urethral swabs or semen of different patient populations with and without clinical symptoms of seminal tract infection

Reference	Study population	Clinical symptoms	Detection of *C.trachomatis* (%)	Detection method
Grant *et al.* (1985)	STD clinic	Non-gonococcal urethritis	13.6	Cell culture
Cevenini *et al.* (1982)	STD clinic	Non-gonococcal urethritis	32.0	Cell culture
Judson (1981)	Urology dept	Non-gonococcal urethritis	30–50	Cell culture
Luger (1987)	STD clinic	Post-gonococcal urethritis	40	Cell culture
Martin (1990)	Urology dept	Post-gonococcal urethritis	70	Cell culture
Soffer *et al.* (1990)	ART clinic	None	20	Cell culture
Wolff *et al.* (1991)	ART clinic	None	25	Cell culture
Berclaz *et al.* (1993)	ART clinic	None	22	Cell culture

KECK C 1998

IMPACT INFLAMMATION ET FERTILITE

Table V. Prevalence of leukocytospermia in male infertility patients

References	Method	WBC	n	Prevalence (%)	Threshold	Country
Erdtz (1974)	Peroxidase	PMN	300	24	5×10^5/ml	Netherlands
Comhaire *et al.* (1980)	Peroxidase	PMN	500	13	1×10^6/ml	Belgium
Reidel and Somm (1995)	Morphology	All	420	11	5×10^6/ml	Germany
Haidl (1990)	Morphology	All	500	16	5×10^6/ml	Germany
Wolff *et al.* (1990)	Immunohistology	All	179	23	1×10^6/ml	USA
Gonzales *et al.* (1992)	Morphology	All	280	38	1×10^6/ml	Argentina
Tomlinson *et al.* (1992)	Immunohistology	All	351	5	1×10^6/ml	UK
Kung *et al.* (1993)	Immunohisology	All	49	2	1×10^6/ml	Hong Kong
Tomlinson *et al.* (1993)	Immunohistology	All	512	3	1×10^6/ml	UK
Wang *et al.* (1994)	Immunohistology	All	101	8	1×10^6/ml	China
Yanushpolsky *et al.* (1995)	Peroxidase	PMN	1710	7	1×10^6/ml	USA

Table VI. White blood cell (WBC) subpopulations in semen of fertile donors and infertile patients according to Wolff *et al.* (1988a)

	Fertile men (n = 7) (×1000/ml) (median)	Infertile men(n = 51) (×1000/ml) (median)
Total WBC count	170	1035
Granulocytes	100	537
Macrophages/monocytes	51.9	228
B lymphocytes	ND	6.4
T4 lymphocytes	4.1	14
T lymphocytes	2.2	17

Table VII. White blood cell (WBC) subpopulations in semen of two different populations of infertile male patients studied by Wolff *et al.* (1988a) and Tomlinson *et al.* (1993) respectively

	Wolff *et al.* (1988a) Fertile men (n = 51) (×1000/ml) (median)	Tomlinson *et al.* (1993) Infertile men (n = 512) (×1000/ml) (median)
Total WBC count	1035	15
Granulocytes	537	5
Macrophages/monocytes	228	4
B lymphocytes	6.4	ND
T4 lymphocytes	14	ND
T lymphocytes	17	ND

EJACULATION MARQUEURS SEMINAUX

Table 3. *Association between ejaculation-to-analysis interval and markers of function of the epididymis (neutral α-glucosidase [NAG]), prostate (prostate-specific antigen [PSA] and zinc), and seminal vesicles (fructose) measured in semen from 915 men assessed for infertility**

Variables	$G_{\leq 30}$	G_{31-60}	$G_{>60}$
	n = 285	n = 583	n = 47
NAG (mU/ejaculate)†	29 (2.0)	28 (2.0)	27 (2.0)
PSA (µg/ejaculate)	3350 (2.0)‡	3400 (2.0)§	2600 (2.0)‡§
Zinc (µmol/ejaculate)	7.0 (2.0)‡	6.0 (2.0)§	5.0 (3.0)‡§
Fructose (µmol/ejaculate)	54 (2.0)	52 (2.0)	43 (2.0)

ELZANATY S 2007

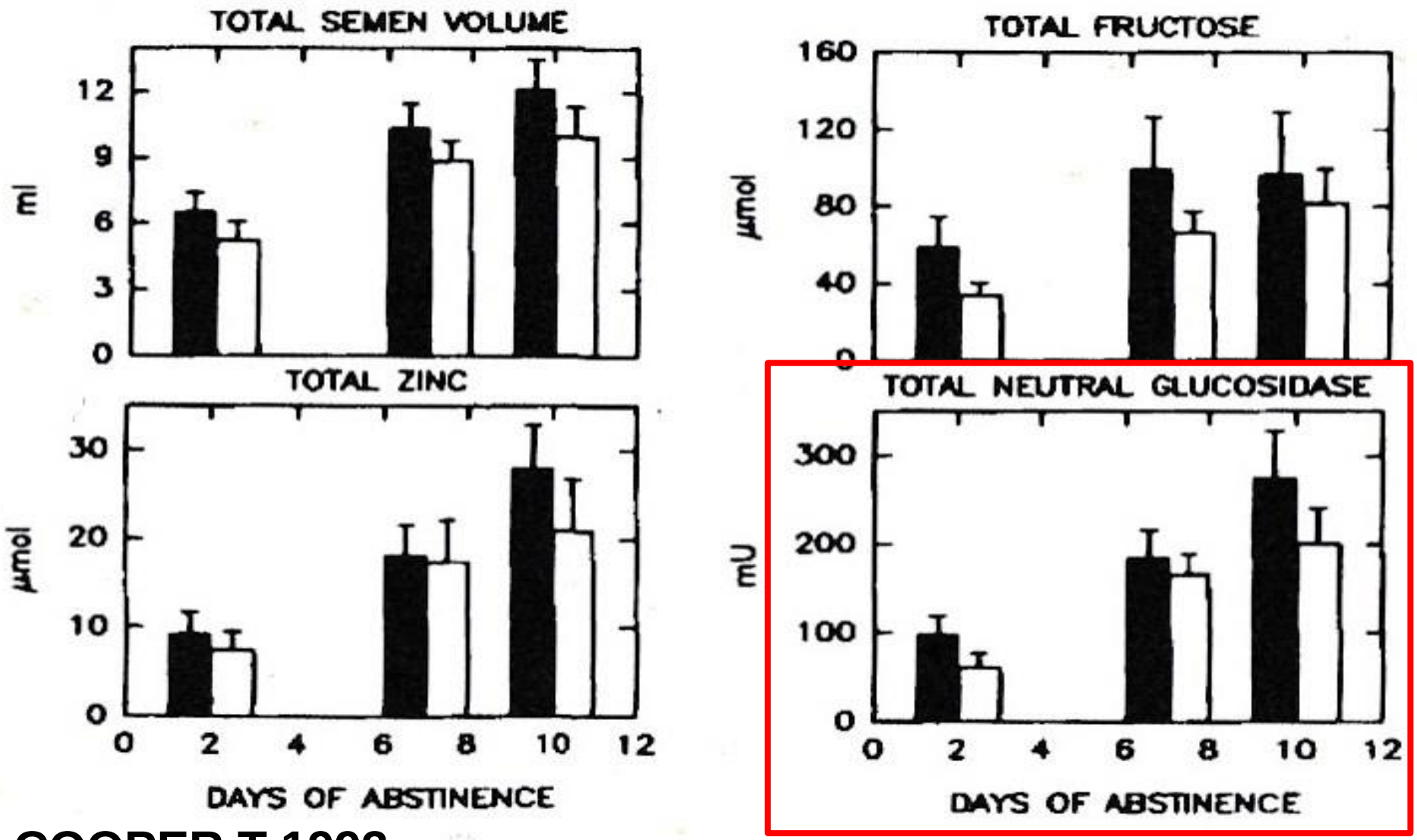
Table III. Bivariate correlation coefficients (r) between levels of the NAG, PSA, zinc and fructose, and sperm motility characteristics in 291 young men from the general Swedish population

	NAG (mU/ml)		PSA (mg/l)		Zinc (mmol/l)		Fructose (mmol/l)	
	r	P^a	r	P^a	r	P^a	r	P^a
Manually assessed motility (%)								
Grade A	0.066	0.264	0.082	0.164	0.032	0.587	–0.075	0.201
Grade A + B	0.107	0.069	0.097	0.097	0.077	0.192	–0.039	0.504
Grade C	–0.032	0.583	–0.073	0.212	–0.091	0.122	0.001	0.993
Grade D	–0.113	0.054	–0.053	0.370	–0.020	0.732	0.035	0.554
CASA-assessed motility								
Motile sperm (%)	0.158	0.009	0.155	0.010	0.104	0.085	–0.082	0.175
Locally motile sperm (%)	0.029	0.639	–0.022	0.720	–0.005	0.941	–0.100	0.099
Immotile sperm (%)	–0.206	0.001	–0.157	0.009	–0.138	0.022	0.084	0.168
Motile sperm VCL (µm/s)	0.010	0.874	0.034	0.591	–0.035	0.570	–0.080	0.198
Motile sperm VSL (µm/s)	0.056	0.373	0.023	0.716	–0.036	0.563	–0.080	0.198
Motile sperm VAP (µm/s)	0.037	0.548	0.022	0.723	–0.051	0.413	–0.089	0.152
Motile sperm ALH (µm)	–0.036	0.563	0.024	0.696	–0.033	0.595	–0.035	0.578
Motile sperm LIN	0.073	0.240	0.037	0.554	–0.003	0.964	–0.045	0.474

Table V. Effect of sperm concentration, levels of NAG, PSA and zinc on CASA percentage motile sperm in 285 young men from the general Swedish population, obtained from multiple regression analysis

Variables	CASA percentage motile sperm	
	P^a	β
Sperm concentration (10^6/ml)	< 0.001	0.298
NAG (mU/ml)	0.773	0.020
PSA (mg/l)	0.037	0.220
Zinc (mmol/l)	0.130	–0.162

ELZANATY S 2007



COOPER T 1993

Fig. 5. The total semen volume and accessory gland output of markers in three ejaculates per day (mean + SEM: ordinate) after various times of abstinence (abscissa). Data from seven healthy donors (filled columns) and six oligozoospermic patients (open columns) are shown.

Absence of chlamydial deoxyribonucleic acid from testicular and epididymal samples from men with obstructive azoospermia

Sreedula Sripada,[a] *Maria Rosario Amezaga, Ph.D.,*[b] *Mark Hamilton, M.D.,*[a] *Hamish McKenzie, Ph.D., F.R.C.P.,*[c] *Allan Templeton, M.D.,*[d] *and Siladitya Bhattacharya, M.D.*[d]

[a] Aberdeen Maternity Hospital, Foresterhill, Aberdeen, United Kingdom; [b] Division of Applied Medicine, Institute of Medical Sciences; [c] Division of Medical Education and Dentistry, School of Medicine; and [d] Division of Applied Health Sciences (Obstetrics and Gynaecology), University of Aberdeen, Foresterhill, Aberdeen, United Kingdom

Objective: To identify *Chlamydia trachomatis* DNA by polymerase chain reaction in the upper genital tract of men with obstructive azoospermia compared with men seeking vasectomy reversal.
Design: Case–control study.
Setting: Tertiary referral center, Aberdeen Royal Infirmary, Aberdeen, United Kingdom.
Patient(s): Cases were men with idiopathic obstructive azoospermia, and controls were men with azoospermia secondary to vasectomy.
Intervention(s): *Chlamydia trachomatis*–specific DNA test by polymerase chain reaction on testicular and epididymal biopsy samples, as well as epididymal aspirate.
Main Outcome Measure(s): Presence of *Chlamydia trachomatis* DNA.
Result(s): We did not detect the presence of *Chlamydia trachomatis*–specific DNA by polymerase chain reaction in the epididymis or testis of 36 asymptomatic men with obstructive azoospermia (14 cases, 22 controls).
Conclusion(s): Our hypothesis that unrecognized, asymptomatic chlamydial infection will lead to complete bilateral obstruction of the male genital tract remains unproven. (Fertil Steril® 2010;93:833–6. ©2010 by American Society for Reproductive Medicine.)

PROSTATITES CHRONIQUES

10 % des consultations en milieu urologique Lipski (89)

- Antécédents de prostatite aiguë
- Clinique
- Retentissement spermatique, 5 études :

  num., mob., Zn ↓

  térato., pyo., pH ↑

Mais 10 - 30 % de spermogramme normal

PA NON BACTERIENNES PROSTATODYNIE

- Situations cliniques associant : pollakiurie, dysurie, douleurs pelviennes sans isolement d'agent bactérien mais stigmates inflammatoires dans les sécrétions prostatiques et l'analyse fractionnée des urines (Stamey)

- S'acharner à mettre en évidence des agents infectieux comme le C.T…..

- 1er jet + spermioculture ? (versus Stamey-Maers)

- Si fièvre toujours rechercher un agent bactérien

TRAITEMENTS

- Mesures hygiéno-diététiques
- Alpha-bloquants, myorerelaxants, antibiotiques

Traitements longs 6 semaines……..

- Anti-inflammatoires non stéroïdiens , immunothérapie, inhibiteurs 5alpha réductase, anti-cholinergiques

Efficacité discutée

- Traitements interventionnels ?

Table 5
Prevalence of previous procedures and treatments for CPPS reported at baseline screening in 488 CPC Study participants

	No. (%)
Previous procedures	
Cystoscopy	259 (53.73)
Other	164 (34.82)
Bladder hydrodistention	44 (9.69)
Urethral dilation	28 (6)
Chronic pelvic pain syndrome treatment before or at screening	
Antibiotics or antimicrobials	464 (95.08)
Anti-inflammatory medicine	319 (66.46)
Plant extracts or herbs	267 (54.71)
Zinc	230 (47.62)
α-blockers	202 (42.44)
Prostate massage	186 (38.19)
Special diet or nutritional supplements	169 (34.7)
Antidepressants	102 (21.16)
Anti-anxiety medications	89 (18.5)
5α-reductase inhibitors	86 (18.53)
Other	85 (17.63)
Stress reduction techniques	78 (16.05)
Narcotics	74 (15.23)
Urinary tract analgesics	70 (14.68)
Anticholinergics or antispasmodics	67 (14.53)
Acupuncture or acupressure	65 (13.32)
Steroids	50 (10.31)
Electrical stimulation	33 (6.8)
Biofeedback	27 (5.57)
Allopurinol	18 (3.78)
Anticonvulsants	16 (3.35)

From [11] with permission.

TRAITEMENT

- Antibiotiques : 6 semaines à 6 mois, voire plus
- Prévention :

  * traitement des prostatites aiguës : au moins 6 semaines

  * orchiépididymites : 6 semaines ?

P.B.P., Chlaemydia + : 30 % des épididymites Poletti (85)

ANTIMICROBIAL THERAPY FOR BACTERIAL AND NONBACTERIAL PROSTATITIS

JACKSON E. FOWLER, JR

ABSTRACT

Antimicrobial therapy is the standard of care for the unusual man with true chronic bacterial prostatitis but does not have much of a role in the treatment of men with nonbacterial prostatitis. The fluoroquinolone antibiotics given for 2 to 4 weeks will cure about 70% of chronic bacterial infections of the prostate. If this treatment fails, the symptomatic manifestations of the infections can almost always be eliminated with suppressive antimicrobial therapy using trimethoprim-sulfamethoxazole, a fluoroquinolone antibiotic, or nitrofurantoin. UROLOGY **60** (Suppl 6A): 24–26, 2002.

Human Reproduction vol.15 no.12 pp.2536–2544, 2000

Effectiveness and limits of antimicrobial treatment on seminal leukocyte concentration and related reactive oxygen species production in patients with male accessory gland infection

.Vicari

Table I. Bacterial isolates and sperm variables performed in overall infected population (n = 122) before the start of the therapeutical trial. Sperm data are expressed as median values and the 10th and 90th percentiles. See text for abbreviations

	PR group (n = 52)	PV group (n = 32)	PVE group (n = 38)
Microorganisms			
Aerobic bacteria			
Gram-positive (%)	13 (25.0)	8 (25.0)	8 (21.0)
Enterococcus	7	6	6
Streptococcus spp.	4	1	1
Staphylococcus spp.	2	1	1
Enterobacteria (%)	21 (40.4)	13 (40.6)	8 (21.0)
Escherichia coli	14	8	6
Proteus spp.	3	3	1
Coliform spp.	2	1	1
Klebsiella	2	1	0
Anaerobic bacteria (%)	4 (7.7)	6 (18.7)*	3 (7.9)
Chlamydia trachomatis (%)	10 (19.2)	1 (3.1)	14 (36.8)**
Ureaplasma urealyticum (%)	4 (7.7)	4 (12.5)	5 (13.1)
Sperm data[a]			
Concentration ($\times 10^6$/ml)	47.5 (11.7–132.6)***	38 (8.4–150.6)***	14.7 (2.1–61.3)
TSN ($\times 10^6$/ejaculate)	115.6 (19.5–464.6)***	104 (29.9–615.7)***	59.0 (17–122.2)
Forward motility (%)	30 (15–40)***	25 (13– 40)***	15 (5–25)
Morphology			
Normal oval forms (Ov, %)	40.8 (28–46)***	34 (23-43)***	15 (12– 34)
Pathological coiled tails (Ct, %)	11.5 (10 –14)	13.5 (11.5–19)	15 (12.5–21)
WBC ($\times$ 10^6/ml)	2.0 (0.8–4.0)***	3.2 (1.1–9.0)	3.7 (1.9–9.5)

[a]Values in parentheses are 10th to 90th percentile ranges.
*$P < 0.05$ versus PR and PVE groups (χ^2 test); **$P < 0.01$ versus PR and PV groups (χ^2 test);
***$P < 0.01$ versus PVE group (U-test).
TSN = total sperm number; WBC = white blood cells.

Table II. Bacteriological cure (BC, = CFU 0–10^3/ml) in response to antimicrobials (ofloxacin or doxycycline) according to the extent of the infection

	Bacteriological cure (%)	
Prostatitis	Treated subsets (n = 40)	Controls (n = 12)
T0	0	0
T1	75.0[a°]	0[°°°]
T3	92.5[a°*]	0[°°°]
T6	87.5	0[°°°]
Prostatovesiculitis	Treated subsets (n = 20)	Controls (n = 12)
T0	0	0
T1	40.9[a]	0[°°°]
T3	70.4[a,b,°,*]	0[°°°]
T6	50.0[b]	0[°°°]
Prostatovesiculoepididymitis	Treated subsets (n = 25)	Controls (n = 13)
T0	0	0
T1	16[a]	0[°°°]
T3	52.0[a,b,°,*]	0[°°°]
T6	36.0[b]	0[°°°]

T0 = pre-treatment; T1 = after 1 month treatment; T3 = after 3 months treatment; T6 = 90 days after antibiotic withdrawal.
[°]$P < 0.01$ versus BC values registered at T1 in PV or PVE groups (χ^2 test); [*]$P < 0.01$ versus BC values registered at T3 in PV or PVE groups (χ^2 test); [°°°]$P < 0.01$ versus matched treatment subsets (Fisher's exact test).
[a,b]Values with the same superscripts within the same column are statistically different ($P < 0.05$, Duncan's multiple test).

Table III. Effect of different antimicrobial (ofloxacin or doxycycline, pooled) treatment on sperm parameters during the trial in prostatitis, prostatovesiculitis and prostatovesiculoepididymitis subsets

Sperm parameter		Antibiotic-treated	Control
Prostatitis (PR)			
		PR, treated (n = 40)	PR, control (n = 12)
M	T0	30.0 (10.0–35.0)[a]	30.0 (10.0–35.0)
	T1	35.0 (10.0–40.0)[b]	30.0 (10.0–35.0)
	T3	45.0 (18.0–55.0)	28.0 (7.3–35.0)[§§]
	T6	45.0 (18.0–55.0)[a,b]	28.0 (8.4–35.0)[§§]
Ct	T0	11.5 (10.0–14.0)[a,b]	11.5 (10.0–14.0)
	T1	9.0 (7.0–11.5)	11.0 (9.0–15.0)
	T3	5.0 (3.0–9.0)[a]	13.0 (11.0–16.0)[§§]
	T6	5.0 (3.0–9.0)[b]	13.0 (11.0–16.0)[§§]
Prostatovesiculitis (PV)			
		PV, treated (n = 20)	PV, control (n = 12)
TSN	T0	104.0 (29.2–620.2)[a,b]	103.5 (29.8–658.3)
	T1	106.0 (29.5–683.2)	100.0 (28.0–643.0)
	T3	132.0 (39.0–751.0)[a]	98.5 (24.2–608.7)[§§]
	T6	134.0 (37.7–763.2)[b]	97.0 (23.0–587.2)[§§]
M	T0	25.0 (10.0–30.0)[a]	25.0 (10.0–30.0)
	T1	27.0 (10.0–30.0)[b]	25.0 (10.0–30.0)
	T3	33.0 (16.0–45.0)	22.0 (7.0–25.0)[§§]
	T6	33.0 (16.0–45.0)[a,b]	22.0 (7.0–25)[§§]
Ct	T0	13.5 (11.5–19.0)[a,b]	13.0 (11.5–19.0)
	T1	9.5 (8.5–14.0)	14.0 (12.5–19.0)
	T3	6.0 (4.0–9.0)[a]	14.0 (12.5–18.0)[§§]
	T6	6.0 (4.0–9.0)[b]	14.0 (12.0–18.0)[§§]
Prostatovesiculoepididymitis (PVE)			
		PVE, treated (n = 25)	PVE, control (n = 13)
Ct	T0	15.0 (12.5–21.0)[a,b]	15.0 (11.0–21.0)
	T1	10.0 (8.5–15.0)	15.0 (11.0–21.0)
	T3	7.5 (4.0–9.0)[a]	14.0 (12.0–18.0)[§§]
	T6	7.5 (4.0–9.0)[b]	14.0 (12.0–18.0)[§§]

OATS : INFECTION DU SPERME
5-15% DES SERIES

Clinique : testicule ?
épididyme ?
TR ?
leucopyospermie
marqueurs biochimiques ↙
pH ↗ vol ↗
écho testiculaire
écho prostatique +/-

Avant l'ICSI :traitements antibiotiques/anti-inflammatoire/éjaculations répétées

Tableau 1 : Spermocultures positives et anomalies du cytogramme.

		Stérilité	Gardnerella	Ureaplasma	Chlamydiae	Escheria Coli	Ureaplasma + Gardnerella	Gardnerella + E. Coli
Tête	Allongée	6,3	6,4	5,2	**11,8**	9,1	6,6	10,4
	Contour irrégul.	6,2	**8,4**	6,6	3,6	7,4	5,3	8,9
	Acrosome mal formé	8,5	**13,3**	7,5	6,3	8,5	6,9	**11,7**
	Sans acrosome	1,9	**2,7**	2	1,4	1,3	2,4	2,8
Pièce inter.	Reste cytoplasmique	4,6	3,5	**6,6**	2,8	**5,6**	4,6	3,2
	Angulation	7,5	5,6	**9,1**	**9,5**	**8,7**	6,8	6,8
Flagelle	Absent	4,6	4,2	4,5	3,8	3,8	**7,5**	4,4
	Enroulé	3,9	3,5	5,4	**9,9**	3,8	3,4	3,7
	Double	5,8	7,8	7	3	5,7	**13,6**	4
		66	71	76	63	69	74	74

CLINIQUE

- Les habitus : Close (90)
  * tabac
  * alcool

- Le varicocèle : Gattucio (88)

FERTILITY AND STERILITY®
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INFERTILITY

Effect of cigarette smoking on levels of seminal oxidative stress in infertile men: a prospective study

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Objective: To investigate levels of seminal oxidative stress (OS) and sperm quality in a group of infertile men with a history of cigarette smoking.

Design: A prospective clinical study.

Setting: Male infertility clinic, Urological Institute, the Cleveland Clinic Foundation, Cleveland, Ohio.

Patient(s): Infertile men who smoked cigarettes (n = 20), infertile men who were nonsmokers (n = 32), and healthy nonsmoking donors (n = 13).

Intervention(s): Genital examination, standard semen analysis, sperm DNA damage.

Main Outcome Measure(s): Levels of seminal reactive oxygen species (ROS) and total antioxidant capacity (TAC) measured by a chemiluminescence assay and seminal OS assessed by calculating a ROS-TAC score. Sperm DNA damage was measured by sperm chromatin structure assay.

Result(s): Smoking was associated with a 48% increase in seminal leukocyte concentrations ($P<.0001$), a 107% increase in ROS levels ($P=.001$), and a 10-point decrease in ROS-TAC scores ($P=.003$). Differences in standard sperm variables and DNA damage indices between the infertile smokers and infertile nonsmokers were not statistically significant.

Conclusion(s): Infertile men who smoke cigarettes have higher levels of seminal OS than infertile nonsmokers. Given the potential adverse effects of seminal OS on fertility, physicians should advise infertile men who smoke cigarettes to quit. (Fertil Steril® 2002;78:491–9. ©2002 by American Society for Reproductive Medicine.)

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Relationship between varicocele and sperm DNA damage and the effect of varicocele repair: a meta-analysis

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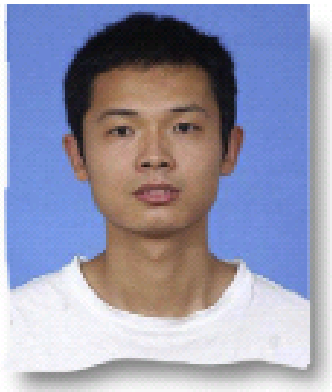

Dr Wang is currently reading for his PhD at Chongqing Medical University, China. His research topic is sperm function and sperm DNA damage.

Abstract Varicocele, a cause of male infertility, occurs in nearly 40% of infertile males. It has been postulated that varicoceles may cause sperm DNA damage. Sperm DNA integrity has been recognized as one of the important determinants of normal fertilization and embryo growth in natural and assisted conception. Eighty-three human studies were identified after an extensive literature search involving the role of varicoceles in sperm DNA damage. Of the 83 studies, 12 were selected that measured similar types of reactive sperm DNA damage. Seven studies determined the damage of sperm DNA in varicocele-associated patients and six studies evaluated the efficacy of varicocelectomy. One study was a duplicate because both outcomes were included. Data were analysed using RevMan software. The overall estimate showed that patients with varicoceles have significantly higher sperm DNA damage than controls, with a mean difference of 9.84% (95% CI 9.19 to 10.49; $P < 0.00001$). A varicocelectomy can improve sperm DNA integrity, with a mean difference of −3.37% (95% CI −4.09 to −2.65; $P < 0.00001$). In conclusion, there is increased sperm DNA damage in patients with varicoceles and varicocelectomy may be a possible treatment; however, more studies with appropriate controls are needed to confirm this finding.

LA SEXUALITE

- L’abstinence :

  augmente la leucospermie et la bactériospermie
- Type de sexualité - David (96)

  pas de différence, sauf chez les homosexuels

  (E. Coli)
- Infection du sperme, traitement - Branigan (94) 1 seul groupe à 6 mois : 3 éjaculations par semaine

Relationship between the duration of sexual abstinence and semen quality: analysis of 9,489 semen samples

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Objective: To evaluate the relationship between duration of sexual abstinence and various characteristics of normal and subnormal semen.

Design: A retrospective study based on computerized data.

Setting: Fertility and IVF unit at a university medical center.

Patient(s): Nine thousand, four hundred eighty-nine semen samples from 6,008 patients were analyzed according to the World Health Organization (WHO) manual and grouped according to sperm concentration (10^6/mL) into severe ($0.2–4 \times 10^6$), moderate ($>4–10 \times 10^6$), and mild ($>10–19.99 \times 10^6$) oligozoospermia, and normozoospermia ($\geq 20–250 \times 10^6$) groups.

Main Outcome Measure(s): In each group mean values of semen volume, sperm concentration, percentage of motile sperm and of normal morphology (according to WHO or Kruger criteria), total sperm count, and total motile sperm count per ejaculate were related to duration of abstinence.

Result(s): Among the 3,506 oligozoospermic samples, the peak mean sperm motility of 30.3% was observed after 1 day of abstinence. Similarly, the mean percentage of normal morphology among mild–moderate oligozoospermic samples (n = 2,260) reached peak values of 7.4%–8.6% between 0–2 days of abstinence. The 5,983 normozoospermic samples showed a significant decrease in the percentage of sperm motility and normal morphology to mean values of 33.1% and 7.0%, respectively, on days 11–14 of sexual abstinence.

Conclusion(s): Our data challenge the role of abstinence in male infertility treatments and suggest that to present the best possible semen samples, patients with male factor infertility should collect the semen after just 1 day of sexual abstinence. Patients presenting normal sperm analysis or sperm donors for cryopreservation purposes should be advised not to exceed 10 days of sexual abstinence. (Fertil Steril® 2005;83:1680–6. ©2005 by American Society for Reproductive Medicine.)

TABLE 1

Comparison of semen volume, sperm concentration, and percentage of sperm motility in the three oligozoospermic semen sample groups in relation to sexual abstinence duration.

	Severe (group 1) n = 1,246				Moderate (group 2) n = 1,107				Mild (group 3) n = 1,153			
Abstinence days	N	Volume[a1] (mL)	Concentration[b1] (10^6/mL)	Motility[c1] (%)	N	Volume[a2] (mL)	Concentration[b2] (10^6/mL)	Motility[c2] (%)	N	Volume[a3] (mL)	Concentration[b3] (10^6/mL)	Motility[c3] (%)
0	57	2.4 ± 1.7	2.0 ± 1.0	19.2 ± 14.7	56	2.2 ± 1.3	7.5 ± 1.8	26.3 ± 19.2	49	2.2 ± 1.0	14.8 ± 2.4	28.6 ± 21.7
1	38	2.4 ± 1.2	2.1 ± 1.0	24.5 ± 20.4	49	2.3 ± 1.3	7.1 ± 1.8	28.4 ± 19.2	53	2.5 ± 1.5	14.6 ± 2.5	36.2 ± 21.8
2	126	2.7 ± 1.5	1.7 ± 1.0	20.4 ± 18.0	132	2.7 ± 1.5	7.1 ± 1.8	26.3 ± 17.8	124	2.9 ± 1.3	14.7 ± 2.3	31.8 ± 20.8
3	366	3.2 ± 1.6	1.8 ± 1.1	19.8 ± 16.4	334	3.3 ± 1.7	7.2 ± 1.7	27.1 ± 18.4	361	3.5 ± 1.8	14.9 ± 2.5	32.8 ± 20.3
4	292	3.5 ± 1.8	1.8 ± 1.1	19.8 ± 16.7	263	3.8 ± 1.7	7.0 ± 1.8	23.9 ± 16.4	288	3.8 ± 1.9	14.8 ± 2.3	31.0 ± 19.6
5	159	3.6 ± 1.8	1.8 ± 1.1	16.7 ± 16.5	112	3.7 ± 1.6	7.2 ± 1.9	22.7 ± 16.9	93	4.0 ± 1.9	14.5 ± 2.5	28.2 ± 18.1
6	37	3.8 ± 1.6	1.6 ± 0.9	17.2 ± 15.9	25	3.8 ± 2.0	7.6 ± 1.9	23.6 ± 12.6	31	3.9 ± 1.3	15.1 ± 2.3	27.6 ± 15.7
7	83	3.5 ± 2.1	1.9 ± 1.1	13.2 ± 15.0	54	3.8 ± 2.0	6.8 ± 1.8	24.4 ± 19.0	81	3.6 ± 1.7	14.6 ± 2.3	25.2 ± 16.4
8–10	30	4.0 ± 2.3	1.8 ± 1.1	16.2 ± 15.1	36	4.0 ± 1.8	7.1 ± 1.7	24.1 ± 16.6	24	3.8 ± 1.8	14.6 ± 2.6	29.9 ± 17.9
11–14	38	3.5 ± 2.4	2.2 ± 1.2	11.2 ± 10.7	46	3.6 ± 1.7	6.9 ± 1.7	17.0 ± 12.8	49	3.9 ± 2.4	14.4 ± 2.6	23.7 ± 16.6

Note: The data are expressed as mean ± standard deviation.

Severe (group 1) = 0.2–4 × 10^6/mL; moderate (group 2) = >4–10 × 10^6/mL; mild (group 3) = >10–19.99 × 10^6/mL.

a1, $P<.001$, from days 0–3 to days 4–10; a2, $P<.001$, from days 0–2 to days 3–10; a3, $P<.001$, from days 0–2 to days 3–14.

b1, $P<.001$, from days 2 and 6 to days 11–14; b2, $P<.001$, from day 0 to day 7; b3, $P<.001$, from day 1 to day 3.

c1, $P<.001$, from days 0–4 to days 7, 11–14; and from days 1–3 to day 5; c2, $P<.001$, from days 0–4 to days 5, 11–14; and from day 3 to day 4; c3, $P<.001$, from days 1–4 to days 7, 11–14; and from days 1–3 to day 5.

Levitas. Sperm quality related to sexual abstinence. Fertil Steril 2005.

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Duration of sexual abstinence: epididymal and accessory sex gland secretions and their relationship to sperm motility

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Human Reproduction vol.8 no.8 pp.1251–1258, 1993

Effects of multiple ejaculations after extended periods of sexual abstinence on total, motile and normal sperm numbers, as well as accessory gland secretions, from healthy normal and oligozoospermic men

Table I. Semen volume, sperm concentration, total sperm count, manually assessed sperm motility and sperm morphology according to different sexual abstinence periods from 422 men assessed for infertility

Variables ($n = 422$)	G_{2-3} ($n = 124$)	G_{4-5} ($n = 223$)	G_{6-7} ($n = 75$)
Semen volume (ml)	3.6 (1–13)*,†	4 (1–13)*	4 (1–10)†
Sperm concentration (10^6/ml)	28 (0.1–345)*	47 (0.1–245)*	38 (0.1–314)
Total sperm count (10^6/ejaculate)	110 (1–922)*	188 (0.4–1051)*	162 (0.4–1258)
a (%)	16 (0–70)†	16 (0–79)‡	8 (0–69)†,‡
a + b (%)	47 (2–88)*,†	55 (0–93)*,‡	42 (0–85)†,‡
b (%)	27 (2–61)	29 (0–66)	24 (0–77)
c (%)	14 (0–36)	14 (0–44)	13 (0–46)
d (%)	37 (0–85)	30 (1–100)‡	40 (0–100)‡
Total motile sperm (10^6/ejaculate)	53 (0.04–10)*	118 (0–746)*	74 (0–943)
Normal form (%)	6 (0–15)	5 (0–19)	4 (0–16)
Tail defect (%)	10 (2–47)‡	10 (2–51)‡	14 (6–44)†,‡

Table III. Epididymal and accessory sex gland secretions according to different sexual abstinence periods from 401 men assessed for infertility

Variables ($n = 401$)	G_{2-3} ($n = 217$)	G_{4-5} ($n = 114$)	G_{6-7} ($n = 70$)
NAG (mU/ejaculate)	23 (4–96)*,†	34 (6–94)*	34 (7–107)†
PSA (μg/ejaculate)	3265 (224–10 655)	3507 (245 –16 497)	3981 (660–10 819)
Zinc (μmol/ejaculate)	6 (0.2–26)*,†	8 (0.2–32)*	8 (1–26)†
Fructose (μmol/ejaculate)	53 (1–277)	61 (0–286)	54 (2–167)

Values are given as median (range).
Statistical analysis was done using the Mann–Whitney test. Values with the same sign in superscripts are statistically different (*,†,‡$P < 0.05$).
NAG = neutral α-glucosidase; PSA = prostate-specific antigen.

Spontaneous variation of leukocytospermia in asymptomatic infertile males

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Objective: To investigate the spontaneous variation of leukocytospermia (>1 million/mL) in semen samples from infertile men.

Design: Prospective cohort study.

Setting: Andrologic clinic at university hospital.

Patient(s): Ninety-nine men evaluating for infertility causes.

Intervention(s): Two semen analyses according the World Health Organization criteria combined with urologic investigation without any treatment.

Main Outcome measure(s): Spontaneous (downward/upward) variation in leukocyte count, sperm concentration, total motility, and morphology between the two semen samples.

Result(s): In the first semen analysis, 21% of men had leukocytospermia. By the second analysis, leukocyte concentrations were within the normal range in 9 of these 21 men, corresponding to a downward variation of 43%. In contrast, 7 of 78 patients with normal leukocyte levels at the first analysis had leukocytospermia at the second analysis, corresponding to an upward variation of 9%. The upward variation rates for sperm concentration, total motility, and morphology were 4%, 17%, and 4%, respectively. Downward variation rates were considerably higher for total motility and morphology (30% and 28%, respectively).

Conclusion(s): The rate for spontaneous downward variation of leukocytospermia in the absence of treatment was 43% in this study. This rate should be taken into consideration when treating infertile men with leukocytospermia, because effective medical therapy is still lacking. (Fertil Steril® 2008;90:1757–60. ©2008 by American Society for Reproductive Medicine.)

Key Words: Leukocytospermia, normal variation, spontaneous upward/downward variation, no medical treatment

TABLE 2

Spontanous upward and downward variation rates for semen parameters between the two analyses (n = 198).

	Normal values (WHO)	Upward variation rate	Downward variation rate
Leukocyte concentration	<1 million/mL	9%	43%
Sperm concentration	>20 million/mL	4%	0%
Motility (a + b)	>50%	17%	30%
Morphology	>30%	4%	28%

Note: WHO = World Health Organization.

Lackner. Spontaneous variation in leukocytospermia. Fertil Steril 2008.

- Ejaculation fractionnée

- Ejaculation répétée : Ron El (98), Turkaspa (94)

  20 % en augmentation chez les oligospermiques

- Le recueil est différent d'un rapport -Zavos(98) * x 5 : numération, mobilité

  * pH : 7,6 --> 7,1

  * volume : 2,6 --> 4,1

TRAITEMENT EMPIRIQUE

Bactériospermie plus fréquente chez les patients infertiles que chez les patients fertiles

- Nikkanen (79) ; Berger (83)
  amélioration du spermogramme après traitement, mais taux de grossesse idem
- Berger (83) : grossesses surviennent plutôt dans le 1er mois de traitement

QUELLE ATTITUDE ?

- Avant tout pragmatique et rassurante pour le patient
- Vérifier les modalités de prélèvement, les répéter
- Donner conseil sur le rythme des éjaculations (= des rapports)
- Proposer différentes techniques de recueil

- Proposer mais relativiser un traitement empirique mais avec quel antibiotique ? et quel effet délétère sur la spermatogénèse Schlegel (91)

Inclusion Criteria

All infertile men had chronic abacterial PVE on the basis of the following eligibility criteria: [1] oligozoospermia (sperm concentration $<20 \times 10^6$ cells/mL), asthenozoospermia (<50% spermatozoa with forward progression, a and b grade), or teratozoospermia (<30% spermatozoa with normal oval form); [2] clinical signs on physical examination and ultrasonographic findings considered indicative of chronic PVE, as described elsewhere (1, 2); [3] achievement of bacteriologic cure ($<1 \times 10^3$ colony-forming units/mL) after antimicrobial treatment with ofloxacin (200 mg p.o. every 12 hours) or doxycycline (100 mg p.o. once daily) for 14 days per month over a 3-month period in patients with one or two consecutive cultures with significant bacteriospermia ($\geq 10^5$ colony-forming units/mL), or eradication of *Chlamydia trachomatis* or *Ureaplasma urealyticum* from cultures of urethral swabs obtained after prostatic massage following the same antimicrobial treatment; [4] elevated seminal leukocyte concentration ($>1 \times 10^6$ cells/mL); and [5] overproduction of seminal ROS after antimicrobial treatment.

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Antioxidant treatment with carnitines is effective in infertile patients with prostatovesiculoepididymitis and elevated seminal leukocyte concentrations after treatment with nonsteroidal anti-inflammatory compounds

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Antioxidant treatment with carnitines is effective in infertile patients with prostatovesiculoepididymitis and elevated seminal leukocyte concentrations after treatment with nonsteroidal anti-inflammatory compounds

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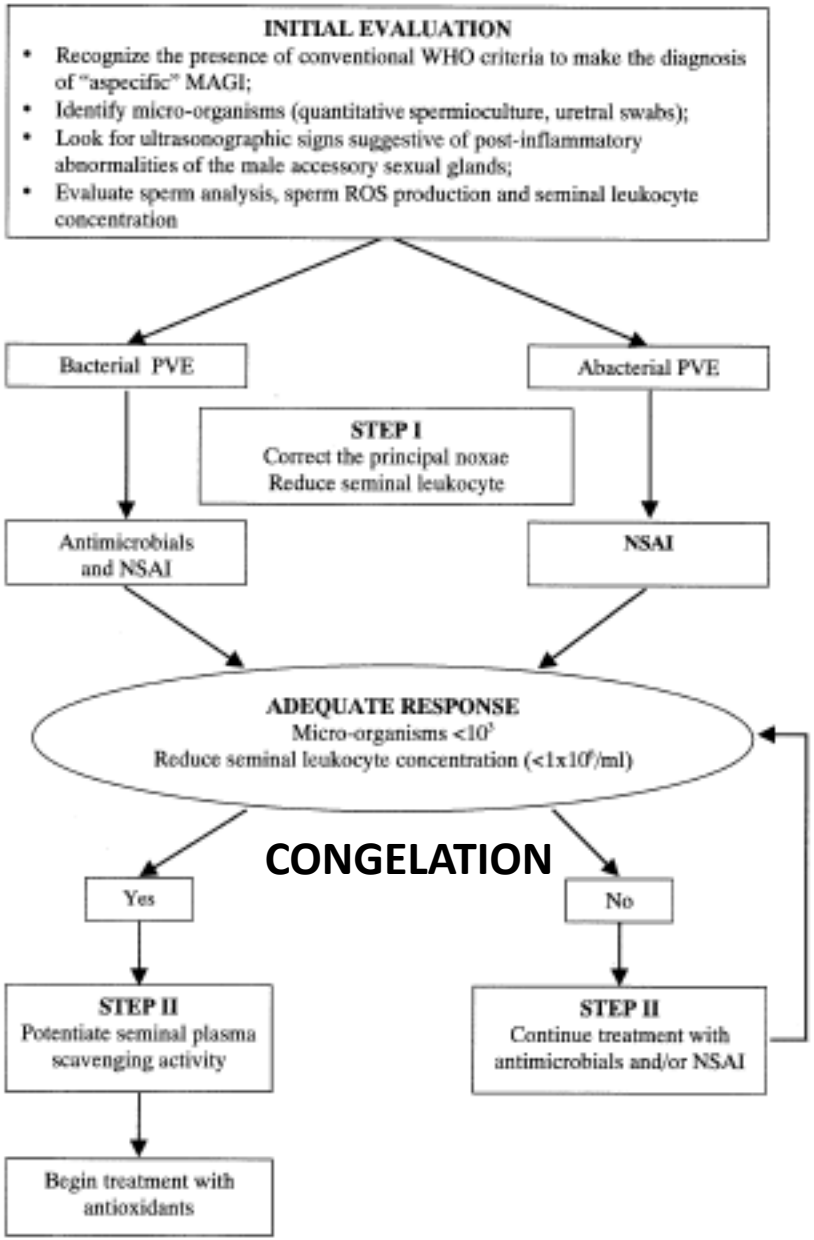
TABLE 1

Sperm variable and seminal leukocyte count in patients with abacterial PVE and elevated leukocyte concentrations (>1× 10^6 cells/mL).

Treatment group (n = 98)[a]	Sperm concentration (×10^6/mL)	Total sperm count (×10^6)	Forward motility (%)	Normal forms (%)	Viability (%)	Leukocyte count (×10^6 cells/mL)
Group A (n = 30)						
Pretreatment (T_0)	14.0 (10, 46)	29 (23, 103)	12 (10, 15)	18 (15, 31)	22 (18, 38)	1.7 (1.1, 2.1)
Carnitines (T_4)	18.0 (13, 56)	38 (23, 108)	16 (10, 22)	22 (17, 35)	35 (24, 46)[b]	1.2 (1.0, 1.4)[b]
Washout (T_7)	15.5 (12, 51)	32 (22, 101)	15 (10, 20)	20 (17, 34)	28 (22, 42)	1.2 (1.0, 1.4)[b]
Group B (n = 16)						
Pretreatment (T_0)	12.5 (8.0, 44)	26 (20, 101)	13 (10.5, 16)	18 (15, 30)	24 (18, 41)	1.8 (1.2, 2.3)
NSAID (T_4)	16.0 (10.5, 47)	35 (23, 108)	23.5 (14, 33)	24 (19, 35)	45 (34, 56)[b]	0.6 (0.3, 1.0)[b]
Washout (T_7)	14.5 (10, 46)	32 (23, 104)	20 (10, 27)	21 (17, 34)	34 (26, 45)	1.0 (0.6, 1.2)[b]
Group C (n = 26)						
Pretreatment (T_0)	14.5 (10, 57)	28 (22, 121)	14 (10, 19)	20 (15, 33)	24 (19, 38)	1.7 (1.1, 2.0)
NSAID (T_2)	19.0 (12, 60)	41 (26, 148)	22 (15, 30)	26 (19, 37)	44 (32, 60)[b]	0.7 (0.4, 1.0)[b]
Carnitines (T_4)	21.5 (13, 64)	49 (28, 179)	32 (18, 40)[b, c]	28 (22, 38)	51 (38, 71)[b, c,d]	0.7 (0.7, 1.0)[b]
Washout (T_7)	16.0 (11, 52)	40 (24, 140)	21 (15, 25)	22 (17, 38)	33 (27, 39)	0.9 (0.8, 1.3)[b]
Group D (n = 26)						
Pretreatment (T_0)	14.0 (10, 46)	28 (23, 108)	12 (10, 15)	18 (15, 33)	24 (18, 39)	1.7 (1.1, 2.1)
NSAID + carnitines (T_4)	18.5 (12, 60)	43 (27, 154)	22 (12, 35)	24 (20, 35)	38 (28, 50)[b]	1.0 (0.6, 1.1)[b]
Washout (T_7)	16.5 (12, 57)	38 (26, 142)	16 (10, 25)	21 (18, 35)	34 (25, 41)	1.0 (0.6, 1.1)[b]

Approach to the patient with prostatovesiculoepididymitis (*PVE*). MAGI = male accessory gland inflammation; NSAI = nonsteroidal anti-inflammatory; ROS = reactive oxygen species; WHO = World Health Organization.



SI UNE AMP EST PREVUE

- Autoconserver ?
- Quand traiter ?
- Comment traiter le sperme au laboratoire ?
- Faire un prélèvement chirurgical ?