Prostatitis – still an enigma

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Committee 15

A.J.Schaeffer (Chairman) R.U. Anderson, J.N. Krieger, B. Lobel, K.G. Naber, M. Nakagawa, J.C. Nickel, L. Nyberg, W. Weidner

The Assessment and Management of Male Pelvic Pain Syndrome, Including Prostatitis

Health Publications 2006

Prostatitis Syndrome

Classical Classification

1. Acute bacterial prostatitis
2. Chronic bacterial prostatitis
3. Abacterial prostatitis
4. Prostatodynia

New Classification

1. Acute bacterial prostatitis
2. Chronic bacterial prostatitis
3. Chronic Pelvic Pain Syndrome
   - 3a. inflammatory CPPS
   - 3b. non-inflammatory CPPS
4. Asymptomatic prostatitis

National Institutes of Health: Chronic Prostatitis Workshop, Bethesda, Maryland, USA, 7.-8. Dez. 1995

Prevalence of Acute and Chronic Bacterial Prostatitis (I+II)

- No studies on the prevalence of either acute or chronic bacterial prostatitis that met the inclusion criteria were identified.

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

Incidence of Acute and Chronic Bacterial Prostatitis (I+II)

- **The incidence of acute or chronic bacterial prostatitis was 1.26 cases per 1,000 men per year, representing an incidence of 102,000 cases per year if these data could be extrapolated to the entire US population (Clemens et al 2005 J Urol).**

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

Prostatitis – an Infectious Disease?

- There is little debate that infection is responsible for acute and chronic bacterial prostatitis.

- However, there is no consensus on the cause(s) of the other prostatitis syndromes.

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

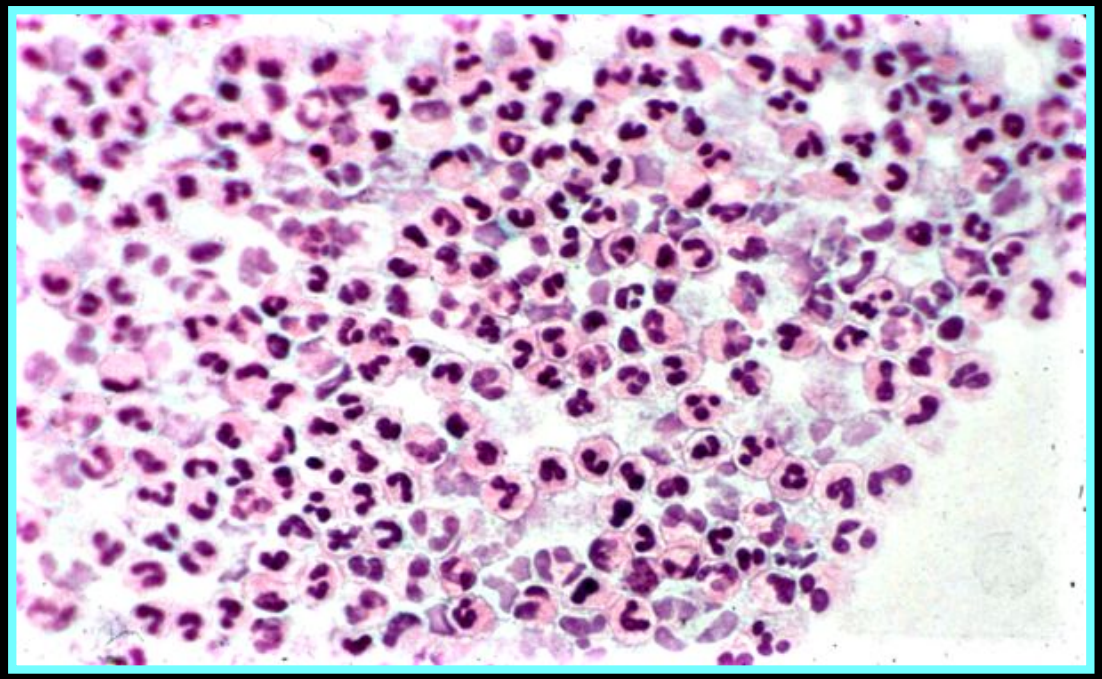
Acute Bacterial Prostatitis

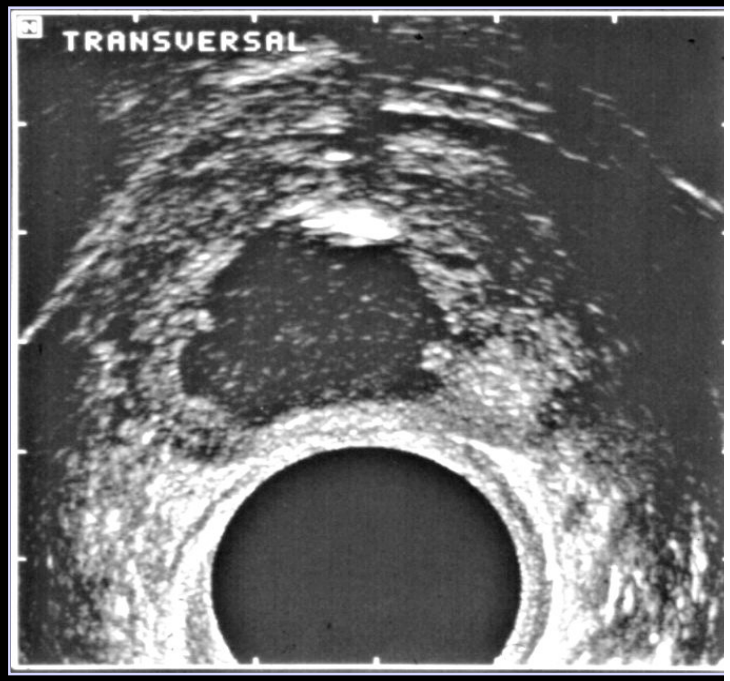
- swollen painful prostate, chills + fever
- severe infection, mostly Gram-negatives
- isolation of pathogens from the urine,
- prostatic massage is contraindicated

Wagenlehner FME, Naber KG 2001 Urologe A 40: 24-28

42 Year Old Man: Recurrent *E. coli* UTIs

Normal upper urinary tract, chills + fever, swollen painful prostate, purulent urethral discharge after palpation





Pathogenesis of Acute Bacterial Prostatitis

- Cho and associates completed a retrospective review of 255 inpatients with ABP from 10 hospitals in Korea [Cho et al 2005 J Urol].

- The most common bacterial species identified were *Escherichia coli* (67%), *Pseudomonas aeruginosa* (13%), *Klebsiella* sp. (6%), and various Gram-positive species (5%).

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

Acute Bacterial Prostatitis

- Empiric therapy with fluoroquinolones and/or betalactam antibiotics
- Antibiotic therapy should be adjusted according to the pathogen(s) isolated and susceptibility testing
- Following improvement of clinical symptoms oral therapy should be continued for a total of 2-4 week
- **Length of treatment is not well defined !**

Wagenlehner FME, Naber KG 2001 Urologe A 40: 24-28

Acute Bacterial Prostatitis

Micturition problems

- **Residual urine <100ml: alpha-rezeptor blockers.**
- **Residual urine >100ml: suprapubic bladder catheter**
- **In case of prostatic abscess: surgical drainage (e.g. TURP)**

Chronic Bacterial Prostatitis

A. most frequent cause of recurrent UTI in adult men

B. often asymptomatic between UTI episodes

B not generally accepted

Krieger JN 1998 J New Rem Clin 47:4-15; Schaeffer AJ 1999 IJAA 11: 205-211

Risk Factor of Chronic Prostatitis

- A history of UTI appears to be associated with chronic prostatitis.
- The Boston Area Community Health Survey found that 79 (3.9%) of 1559 men aged 30-79 years experienced symptoms of prostatitis (Daniels et al 2005).
- A history of UTI increased the risk for prostatitis symptoms (p=0.0270). While 12.6% of participants with a history of UTI had prostatitis, only 3.0% of participants without a history of UTI had prostatitis.

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

Pathogenesis of CPPS (III)

- PCR detection of bacterial DNA in prostatic biopsy specimens from CP/CPPS patients, but not from normal men.

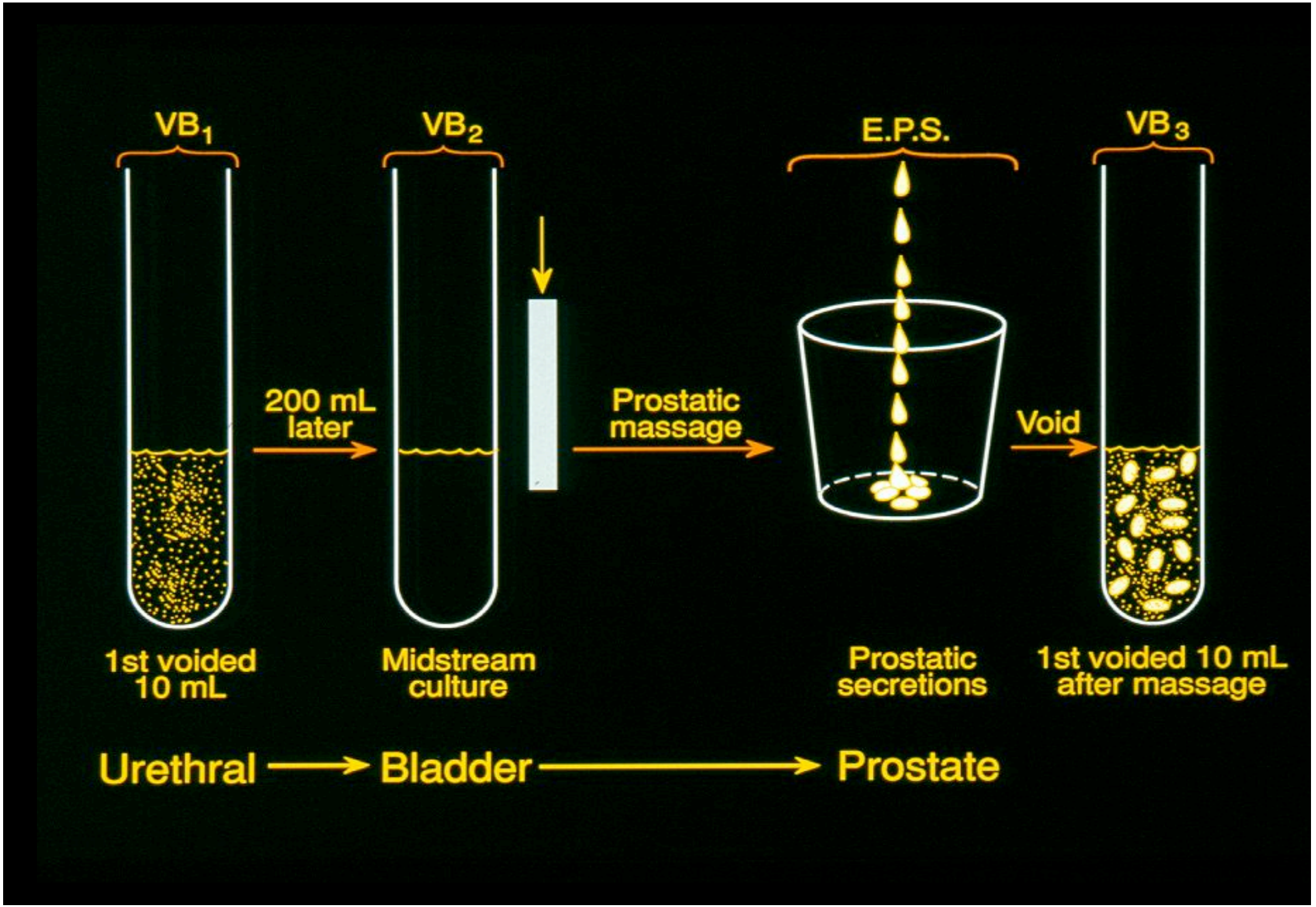
  Krieger et al (1996, 2000, 2002); Nickel et al (1994); Hochreiter et al (2000)

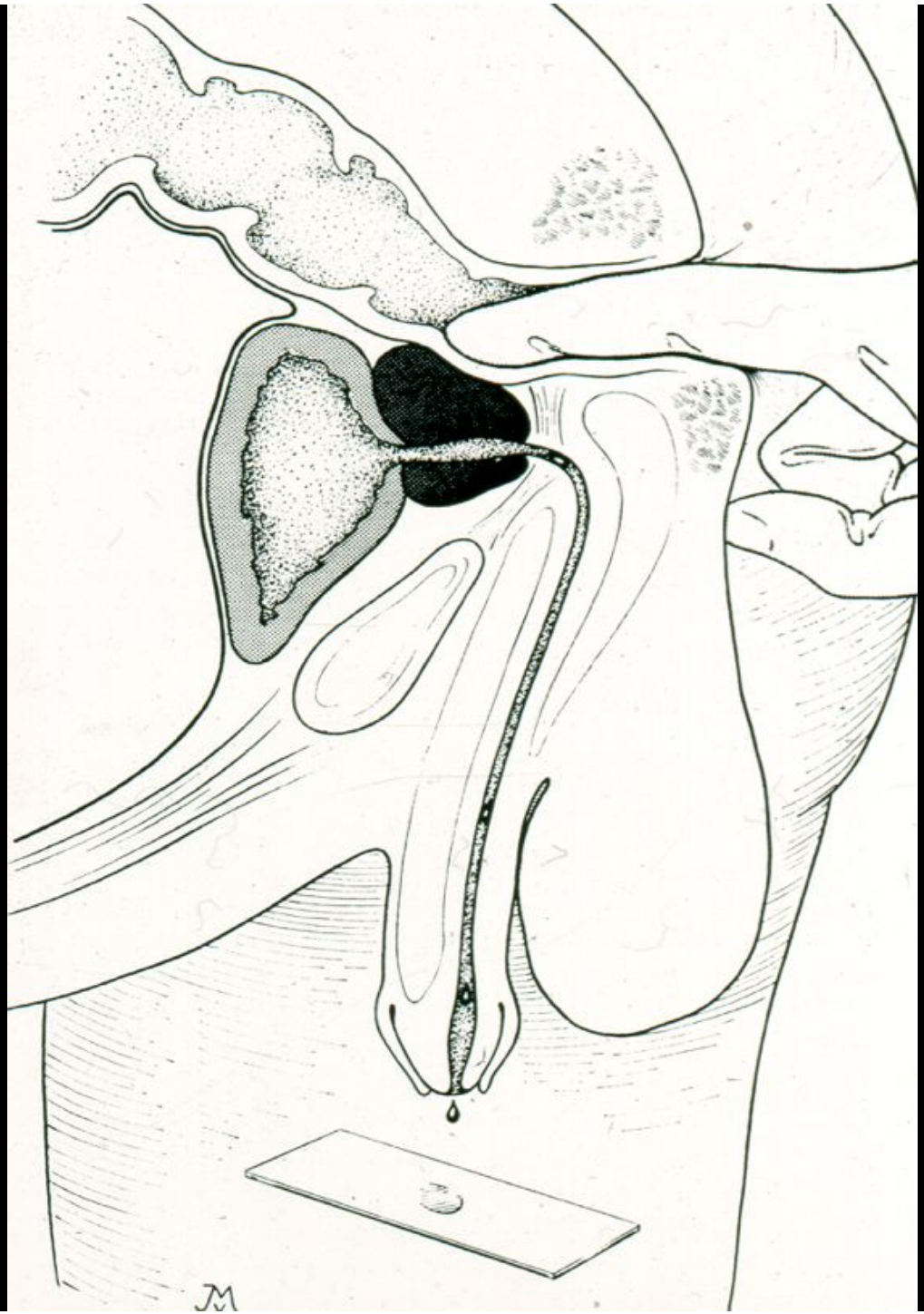
Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

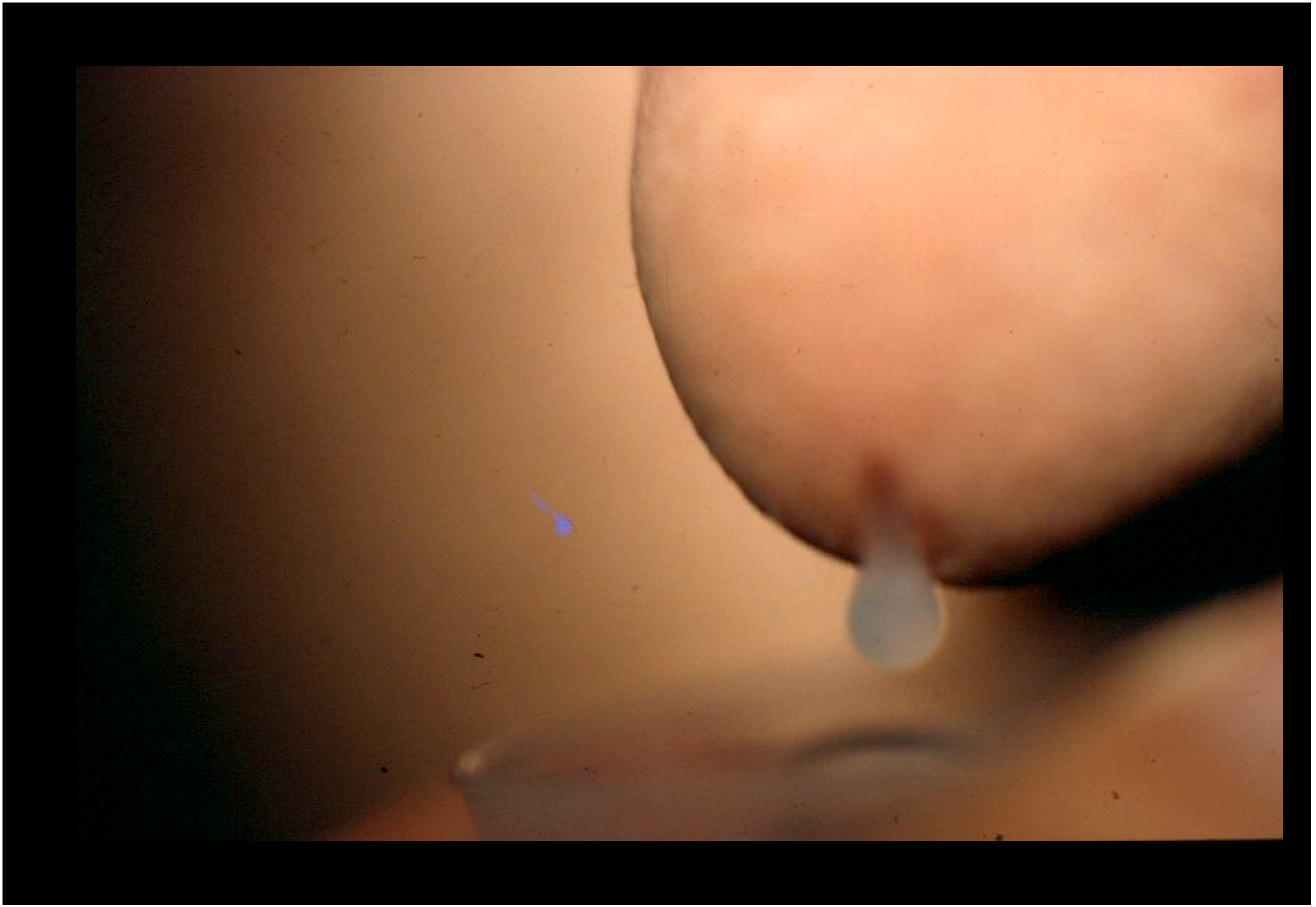
Chronic Bacterial Prostatitis

for diagnosis
4-glass test necessary !

for screening
2-glass test


VB1
VB2
E.P.S.
VB3
200 mL later
Prostatic massage
Void
1st voided 10 mL
Midstream culture
Prostatic secretions
1st voided 10 mL after massage
Urethral
Bladder
Prostate





A-Urin
H-Ur
E-Ur

Pathogens causing CBP

Aetiollogically recognized « Uropathogens »	Remaining controversial
E. coli	*Coag.neg. Staphylococci (CNS)*
Klebsiella spp.	*Streptococci*
P. mirabilis	*Corynebacterium* spp
P. aeruginosa	*C. trachomatis*
Other GNB	Genital *Mycoplasma*
E. faecalis	Anaerobic bacteria
S. aureus	Yeasts / HSV 1 & 2
	T.vaginalis

Naber & Weidner, 2000

Chronic Bacterial Prostatitis

cfu/ml in the 4-glass-specimen

Pat	VB1	VB2	EPS	VB3	Pathogen
1	1200	1200	15,000	4,400	E.coli
2	0	0	4,000	110	E.coli
3	100	200	2,700	110	E.coli
4	300	240	2,400	270	E.coli
5	0	0	100	0	E.coli
6	0	0	50,000	300	P.aeruginosa
7	0	0	500	10	E.cloacae

Krieger JN 1998 J New Rem Clin 47: 4-15

Frequency of Symptomatic Chronic Bacterial Prostatitis (CBP)

Species

E. coli	28	St. faecalis	6
other gramnegative b.	8	St. epidermidis	4

JLU Gießen

Giessen Cohort Study
Weidner and Schiefer, 1995

Baseline pathogens isolated from CBP in recent European clinical studies

Total number	CIP 28 d 500 mg bid	LOMX vs CIP 28 d 400 mg od - 500 mg bid
Organisms	70	190
GPC	16 (23%)	76 (40%)
E. faecalis	16	
GNB	54 (77 %)	114 (60 %)
E. coli	39 (56 %)	70 (61 %)
P. mirabilis	7	17
Klebsiella.spp	2	14
Study Period	1990-1992	1993-1996
References	*Naber & al., 2000*	*Naber & al., 2002*

Baseline pathogens isolated from CBP in recent USA clinical studies

Total number	TROVA vs OFX 28 & 42 d 200 mg qd 300 mg bid	LVX vs CIP 28 d 500 mg qd and bid	
Isolated	395	406	
GPC	322 (81.5%)	344 (85%)	
Enterococci	65	99	
S. haemolyticus	40	41	
S. epidermidis	67	53	
CNS	61	48	
Other GPC	89	103	
GNB	73 (18.5%)	62 (15%)	
E. coli	32	26	
Study Period/Ref	1995-1996/FDA web site	2000-01/Bundrick(2003)	

- **Did the epidemiology of CBP change to more GPC during the last 10 years?**

PRO GPC

- Drach GW. J Urol 1974; 111: 630
- Giamarellou H et al. J Urol 1982; 128: 321
- Gunn BA & Davis CE Jr 1988; J Clin Microb 26: 1055-7
- Nickel JC, Costerton JW. J Urol 1992; 147: 398-400
- Shoskes DA, Zeitlin SI. Prostate Cancer Prostatic Dis. 1999; 2: 159-162
- Bundrick W et al. Urology 2003; 62: 537-541

Inconsistent Prostatic Localization of Gram+ Bacteria from Patients with Chronic Prostatitis

- **Of 470 patients with chronic prostatitis, according to the 4-glass localization test, 29 (6%) had Gram+ (GPB) and 33 (7%) Gram- bacteria (GNB)**
- **49/470 untreated patients had repeated tests (2-4)**
- **20/49 had repeatedly negative tests**
- **29/49 with at least one Gram+ test, 27 (94%) did not had consistent localization of Gram+**

Summary

Localization of Gram+ bacteria are seldom reproducible

Krieger JN, Ross SO, Limaye AP, AUA 2005, abstract #72317

The Problem with Gram-positive Bacteria in the 4-glass Test

- **Urethral contamination of EPS (or the ejaculate) with Gram-positive organisms, usually normal urethral flora, commonly exceed the VB1 culture count by 10-fold**

- **However, in such circumstances the VB3 count never exceeds the VB1 count by 10-fold.**

Stamey TA: Comment to Fowler & Mariano 1984 J Urol 132: 471-473

Japanese criteria for diagnosis of chronic bacterial prostatitis

- **WBC ≥ 10 cells/ mm^3 in VB3 or > 10 cells/ hpf in EPS**
- **Bacteria: ≥10^3 CFU/ ml in VB3 or EPS and 1 log above VB1 and VB2**

(if only Gram positive cocci were isolated, ≥10^4 CFU/ ml)

S. Kamidono, S. Arakawa, J. Ishigami, S. Sasai, Y. Kumamoto, N. Kawamura, M. Ohkoshi, K. Suzuki, Y. Naide, M. Ohkawa, H. Hisazumi, Y. Ito, Y. Ban, Y. Kawada. Acta Urol. Jpn. 1989; 35: 427-445

What is the Role of C. trachomatis and Ureaplasma in Prostatitis

- **One systematic review (Weidner et al 2002)**
- **The detection of U. urealyticum and/or C. trachomatis in the 4-glass test does not reflect the identification of causative microorganisms for CP/CPPS**
- **The problem of urethral harborment versus infection of the prostate cannot be solved by the available microbiological techniques**

Anderson & Weidner, WHO Consultation, Paris 2005

Fluoroquinolones are drugs of choice for CBP

- **Good activity against both GNB and GPC isolated from prostatitis**
- **Favorable pharmacokinetic properties and high distribution into prostatic tissue**
- **Well demonstrated clinical and bacteriological efficacy**

Fluoroquinolones in Chronic Bacterial Prostatitis

Quinolone	Dosage per day (mg)	Duration therapy (Tage)	evaluable Patients (number)	Bacteriol. Eradication (%)	Follow up (Monate)	Pub.-year Author(s)
Norfloxacin	800	28	14	64	6	1990 Schaeffer et a
Norfloxacin	4-800	174	42	60	8	1991 Petrikkos et a
Ofloxacin	400	14	21	67	12	1989 Pust et al
Ciprofloxacin	1000	14	15	60	12	1987 Weidner et a
Ciprofloxacin	1000	28	16	63	21-36	1991 Weidner et a
Ciprofloxacin	1000	28	34	76	6	2000 Naber et al
Ciprofloxacin vs.	1000	28	78	72	6	2001 Naber et al
Lomefloxacin	400	28	75	63	6	2001

Diagnosis according Meares & Stamey

Nickel, Naber & Lobel, WHO Consultation, Paris 20

LVX 500 mg od vs CIP 500 mg bid for 28 days (Bundrick *et al.*, 2003)

Primary endpoint (5-18 days >EOT)	LVX	CIP	[CI]
Eradication in PPb population (Primary efficacy variable) in mITT population	102/106 (75 %) 119/170 (70.0 %)	96/125 (76.8%) 109/151 (72.2 %)	[-8.98;12.58] [-8.07;12.44]
Clinical success In PPb population In mITT population	 102/136(75%) 122/170(72%)	 91/125(73%) 107/151(71%)	 [-13.27;8.87] [-11.15;9.34]

Oral levofloxacin 500 mg once daily in the treatment of chronic bacterial prostatitis

K. G. Naber, K. Roscher, H. Botto, V. Schaefer

Int J Antimicr Agents 2008; 32: 145-153

Inclusion criteria

- **Males ≥ 18 years**

- **Chronic bacterial prostatitis (CBP, Category II)**
  Clinical diagnosis based on:
  - **Clinical signs and symptoms**
  - **History**
  - **Laboratory evidence**

Study Design

Day	-7 to -1	1	12-16	5-12	28 ± 3	3m ±1w	6m ±1w
4 weeks treatment with 500mg OD				Post treatment period			
Visit	1	2	3	4	5	6	7
Assess-ments:	• MBE	• CE • SA • U, L	• CE • SA • Q	• CE • SA • Q, U, L	• MBE • CE+R • SA • Q, U, L	• CE+ R • SA • Q, U	• MBE • CE+R • SA • Q, U, L

MBE = Microbiological Evaluation
CE = Clinical Evaluation
CE+R = Clinical Evaluation incl. Relapse rate
SA = Safety Assessment
Q = Symptom assessment questionnaire
U = Urinalysis,
L = Clinical safety laboratory

End of treatment Study day 28

Clinical Efficacy

Secondary objectives:

- **Clinical success rate (cured & improved subjects)**
  - **Day 5-12 PT* (V4): 92/100 (92%) (95%CI [84.8, 96.5]%)**

- **Long-term success**
  - **1 month PT (V5): 82/106 (77.4%) (95%CI [68.2, 84.9]%)**
  - **3 months PT (V6): 70/106 (66.0%) (95%CI [56.2, 75.0]%)**
  - **6 months PT (V7): 65/105 (61.9%) (95%CI [51.9, 71.2]%)**

*** PT Post-treatment**

Microbiological Efficacy

1. Primary objective
   Eradication rate 1 month post-treatment

   104 subjects evaluable for microbiological outcome (ITT)

   Microbiological eradication in 82/104 (78.8%)
   (95% CI [69.7,86.2]%) in the ITT data set

2. Secondary objectives:
   Continued eradication rate 6 months post-treatment:
   Microbiological eradication in 46/50 (92.0%)
   (95% CI [80.8,97.8]%) in the ITT data set

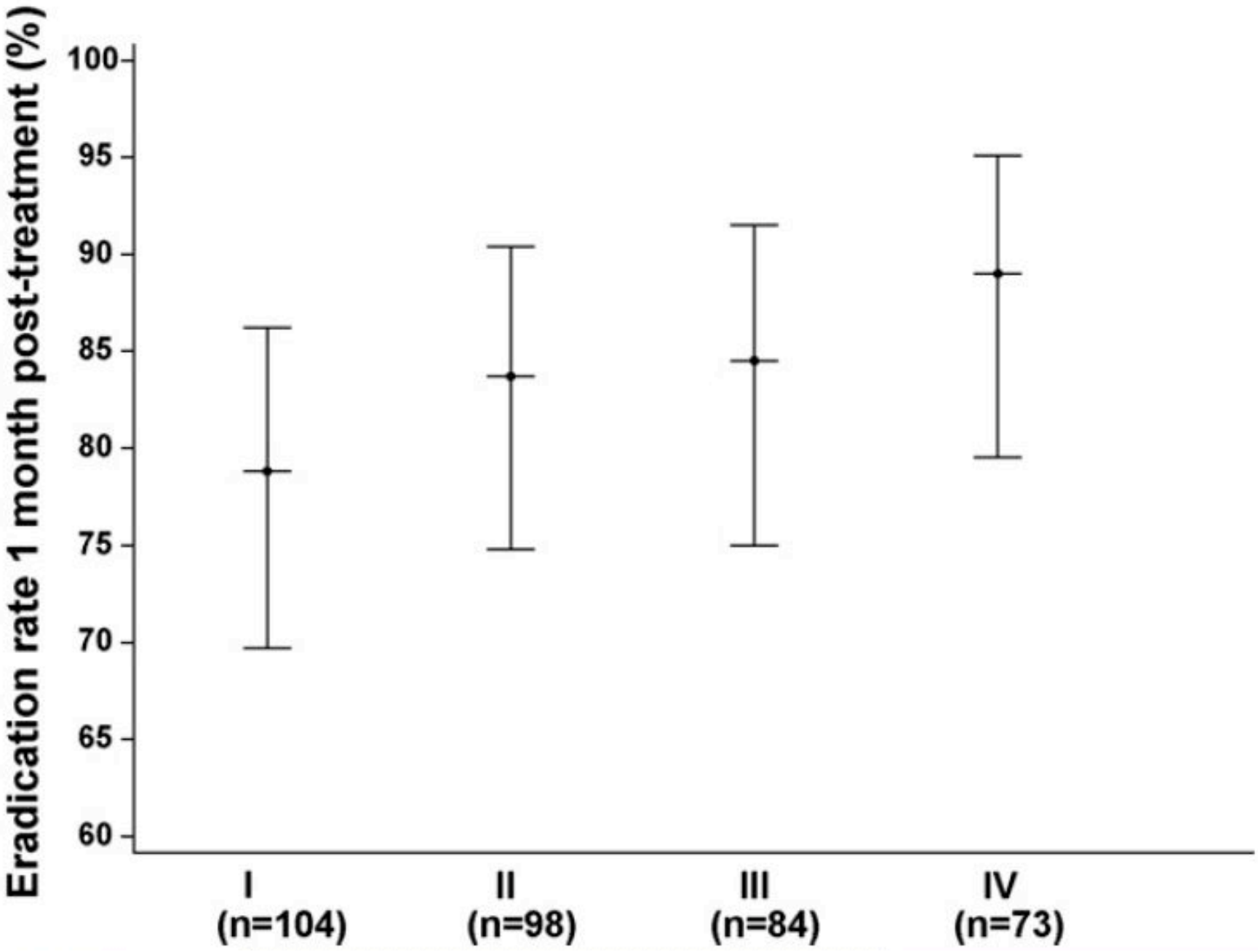
Microbiological Evaluation

I. EPS/VB3 ≥ 10*2cfu/ml and 10 x higher than VB2/VB1.
WBC not considered

II. EPS/VB3 ≥ 10*3 cfu/ml and 10 x higher than VB2/VB1.
WBC not considered

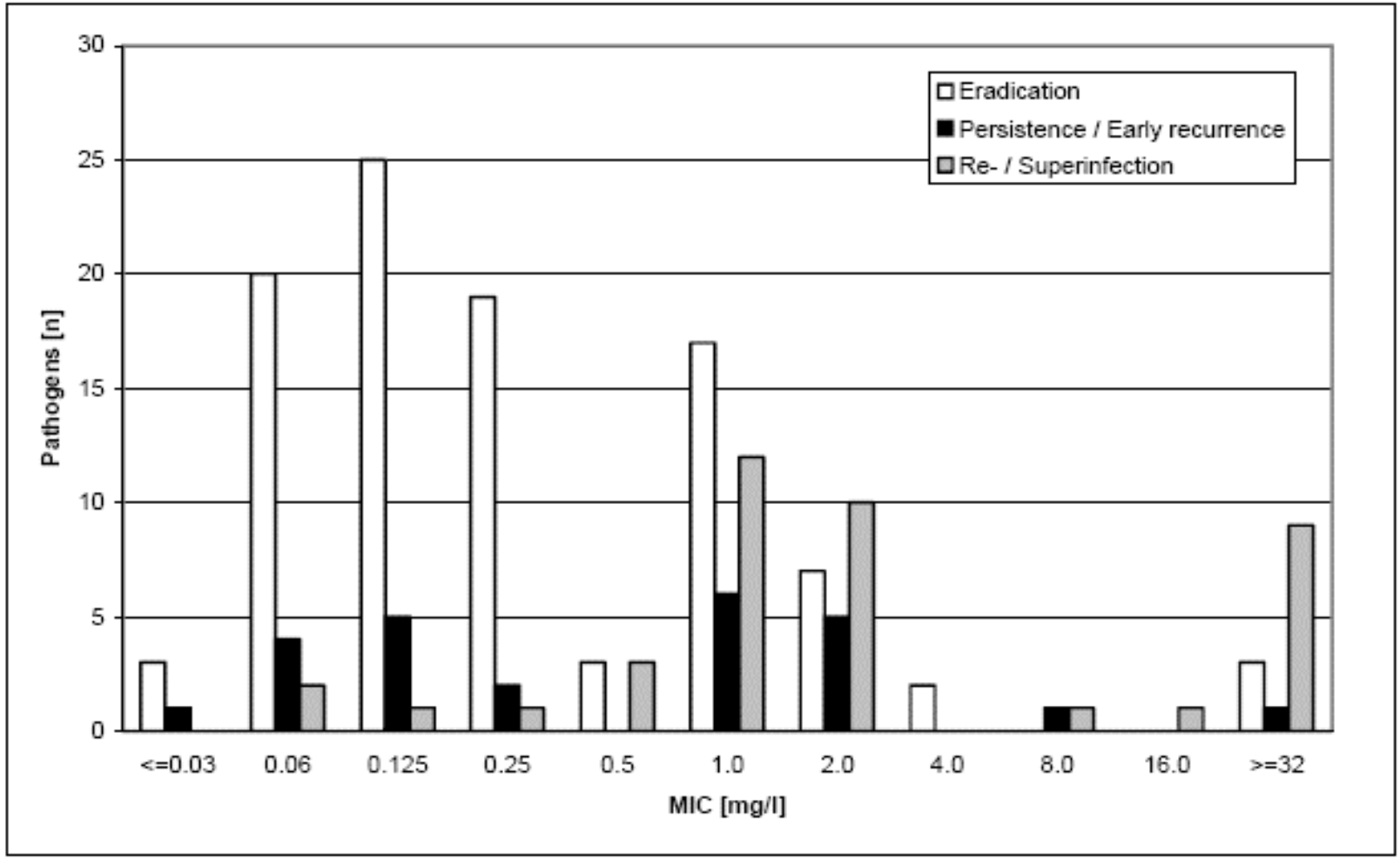
III. EPS/VB3 ≥ 10*3 cfu/ml and 10 x higher than VB2/VB1
WBC ≥10/HPF or ≥1'000/ml

IV. EPS/VB3 Gram – ≥10*3 cfu/ml and Gram+ ≥10*4 cfu/ml
and 10 x higher than VB2/VB1; WBC ≥10/HPF or ≥1'000/ml
(Japanese criteria)


Eradication rate 1 month post-treatment (%)
100
95
90
85
80
75
70
65
60
I
(n=104)
II
(n=98)
III
(n=84)
IV
(n=73)

Chronic Bacterial Prostatitis

MIC of pathogens at 1 month after treatment with levofloxacin 500mg qd for 4 weeks



In case of (presumed) eradication or persistence/early recurrence: MIC of pathogens at baseline
In case of re-/superinfection: MIC of pathogens at 1 month after treatment (cumulative)

Naber KG et al IJAA 2008

Pathogenesis of CPPS (III)

- There is no consensus on the cause of either CP/CPPS or asymptomatic inflammatory prostatitis.

- Proposed pathogenetic mechanisms include: infection, voiding or neuromuscular dysfunction, neuropathic pain, interstitial cystitis, and immune dysfunction

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005

TREATMENT

Problems with prostatitis treatment studies

- **Small number of included patients**
- **Short term studies**
- **Only few of the studies are randomized and placebo-controlled**
- **Inclusion criteria are not defined or not comparable**
- **Outcome criteria are not defined either**
- **Driven by pharmaceutical industry**

Nickel 2006

3 A's of Chronic Prostatitis Medical Therapy

1. Antibiotics
2. Anti-inflammatories
3. Alpha-blockers

BUT up until 3 years ago, no evidence to support the use of these medications in CP/CPPS

Nickel 2006

RCTs Evaluating Medical Therapy in CP/CPPS

•***Antimicrobials***		
	Levofloxacin	**n=80**
	Ciprofloxacin	**n=98**
•***Alpha-Blockers***		
	Tamsulosin	**n=98**
	Terazosin	**n=86**
	Tamsulosin	**n=57**
	Alfuzosin	**n=37**
•***Anti-inflammatories***		
	Roficoxib 25 mg	**n=112**
	Roficoxib 50 mg	**n=108**
	Zafirlukast	**n=17**
•***Other***		
	Pentosanpolysulfate	**n=100**
	Finasteride	**n=64**
	Mepartricin	**n=26**
	Quercetin	**n=28**

Nickel et al. 2003

Alexander et al. Ann Inter Med 2004

Chean et al.J Urol 2003

Nickel et al. Urol 2004

Mehik et al. Urol 2003

Nickel et al. Urol 2003

Nickel et al. Urol 2005

Goldmeier et al.Int J STD & Aids: 2005

Nickel et al. BJUI 2004

De Rose et al. Urol 2004

Shoskes et al. Urol 1999

RCTs Evaluating Medical Therapy in CP/CPPS

Antimicrobials	
Levofloxacin	n=80
Ciprofloxacin	n=98
Alpha-Blockers	
Tamsulosin	n=98
Terazosin	n=86
Tamsulosin	n=57
Alfuzosin	n=37
Anti-inflammatories	
Roficoxib 25 mg	n=112
Roficoxib 50 mg	n=108
Zafirlukast	n=17
Other	
Pentosanpolysulfate	n=100
Finasteride	n=64
Mepartricin	n=26
Quercetin	n=28

Responder Analyses

Placebo: 16-40%

Treatment: 22-66%

NIH-CPSI

- Validated, robust, reliable, sensitive

- 3 dbomains

Pain	0-21
Voiding	0-10
QoL/Impact	0-12
Total Score	0-43

- Responder

  4-6point decrease in total score

Litwin et al 1999

Mac Naughton-Collins et al******

Randomized Controlled Trials for Treatment for CPPS

Oral Antimincrobials	Duration of Treatment	Patients		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Levofloxacine (Nickel, 2003)	6 weeks	45	35	-5,4	-2,9
Ciprofloxacin (Alexander, 2004)	6 weeks	49	49	-6,2	-3,4

NIH-CPSI = National Institutes of Health Chronic Postatitis Symptom Index The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.

Randomized Controlled Trials for Treatment of CPPS

Alpha-blocker	Duration of Treatment	Patient		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Terazosin (Cheah, 2003)	14 weeks	43	43	-14,3*	-10,2
Alfuzosin (Mehik, 2003)	24 weeks	17	30	-9,9*	-3,8
Doxazosin (Evliyaoglu, 2002)	16 weeks	30	30	-3,9*	-5
Tamsulosin (Nickel 2004)	6 weeks	27	30	NR**	NR
Tamsulosin (Alexander, 2004)	6 weeks	49	49	-4,4	-,34

NIH-CPSI = National Institutes of Health Chronic Prostatitis Symptom Index
The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.
* Singificant differnce between treatment and placebo ($p < 0,05$)
** Difference between treatment groups in change from baseline was -3,6 in favor of tamsulosin ($p=0,04$)
NR = not reported

Randomized Controlled Trials for Treatment of CPPS

5- Alpha reductase inhibitor	Duration of Treatment	Patients		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Finasteride (Nickel, 2004)	24 weeks	33	31	-3	-0.8

§ = NIH-CPSI = National Institutes of Health Chronic Postatitis Symptom Index
The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.

Randomized Controlled Trials for Treatment of CPPS

Non-steroidal anti-inflammatory	Duration of Treatment	Patients		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Roficoxib* (Nickel, 2003)	6 weeks				
25 mg		53	50	-4,9	-4,2
50 mg		49	50	-6,2	-4,2

§ = NIH-CPSI = National Institutes of Health Chronic Prostatitis Symptom Index The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.

* Roficoxib has been withdrawn

Randomized Controlled Trials for Treatment of CPPS

Bioflavonoid	Duration of Treatment	Patients		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Quercetin (Shoskes, 1999)	4 weeks	15	13	-7,9*	-1,4

§ = NIH-CPSI = National Institutes of Health Chronic Prostatitis Symptom Index The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.

*Significant difference between treatment and placebo ($p<0,05$)

Randomized Controlled Trials for Treatment of CPPS

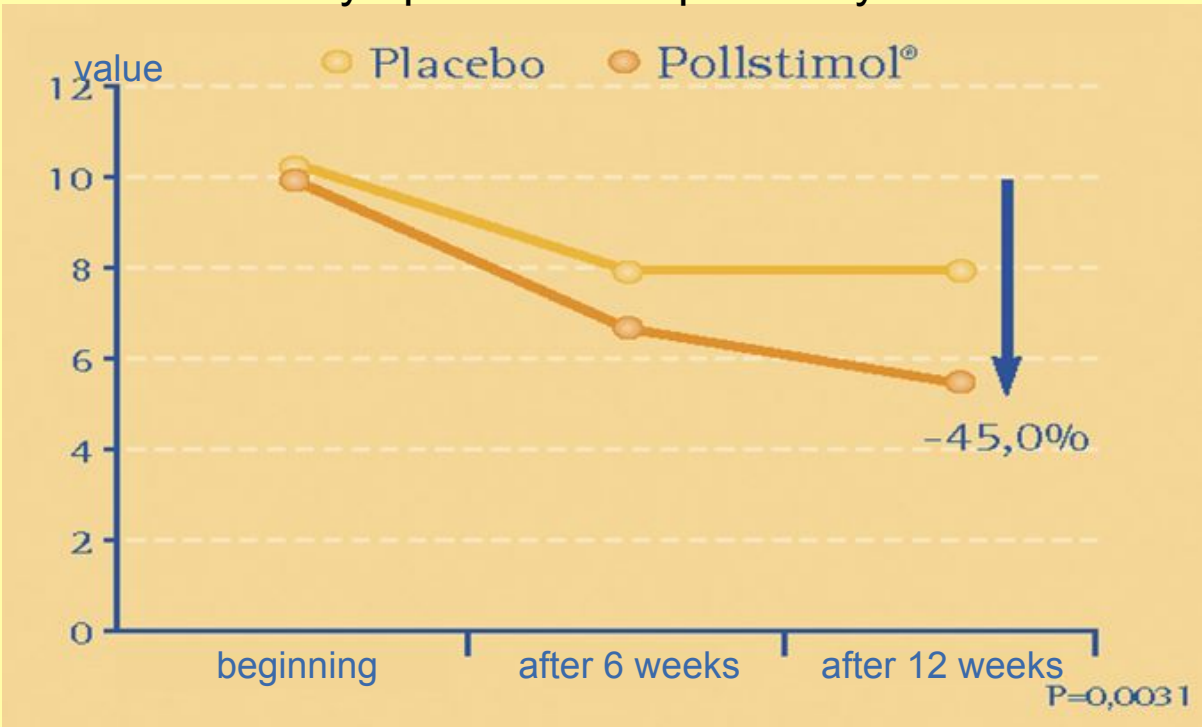
Other agents	Duration of Treatment	Patients		Change in NIH-CPSI§	
		Treatment	Placebo	Treatment	Placebo
Pentosan polysulfate (Nickel, 2005)	**16 weeks**	**51**	**49**	**-5,9**	**-3,2**
Mepartricin (De Rose, 2004)	60 days	13	13	-15*	-5

§ = NIH-CPSI = National Institutes of Health Chronic Prostatitis Symptom Index
The NIH-CPSI total score ranges from 0 to 43 points. A negative change indicates improvement.
*Significant difference between treatment and placebo ($p<0,05$)

Randomized Controlled Trials for Treatment of CPPS

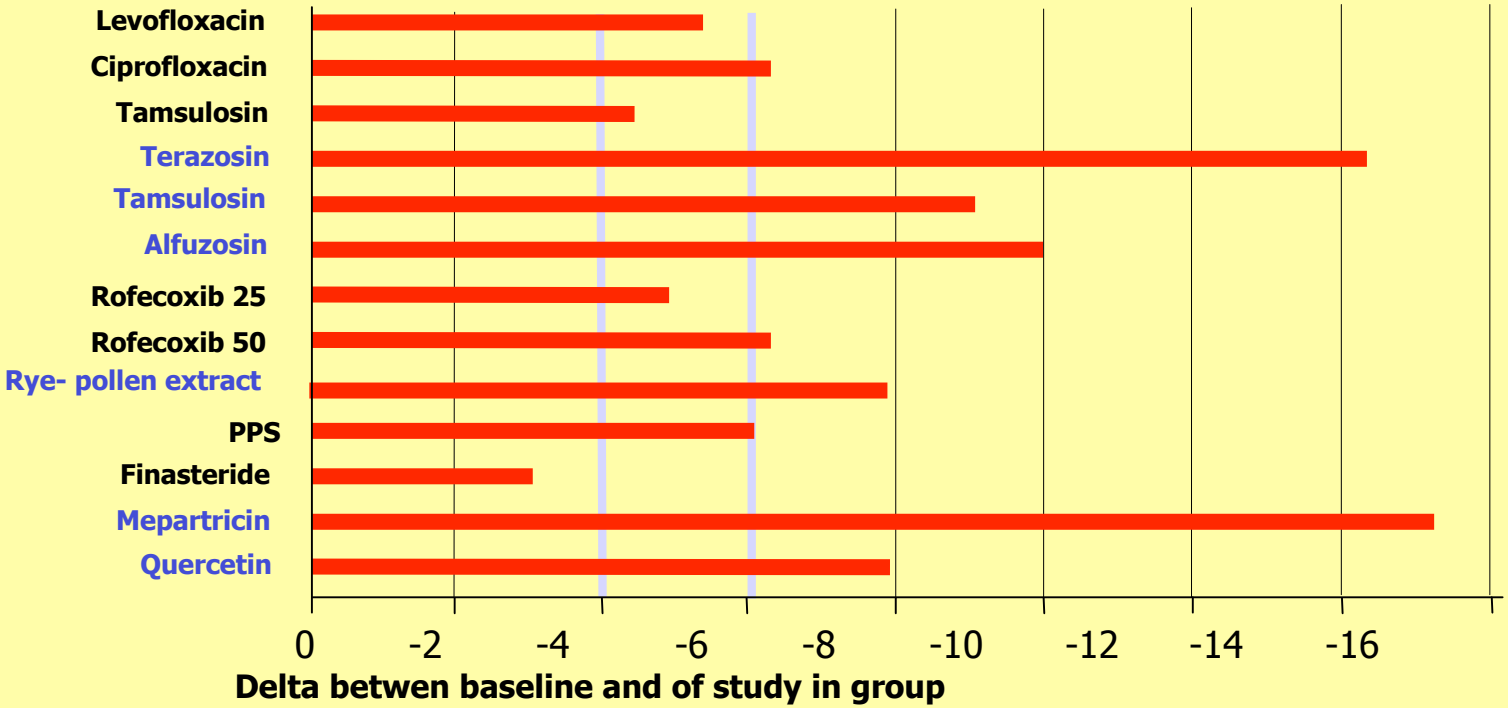
Effect of Rye-Pollen extract:
pain & dysuria decreasing with 45%

NIH Symptom Score- pain & dysuria



Weidner 2006
In press

RCTs Evaluating Medical Therapy in CP/CPPS



Nickel 2006

Non-Controlled Trials Other Agents

- **Allopurinol (Persson, 1996)**
- **Been pollen extract (Buck, 1989)**
- **Corticosteroids (Bates, 2000)**
- **Gabapentin (Sasaki, 2001)**
- **Muscle relaxants (Osborn, 1981)**
- **Saw Palmetto (Shoskes, 2002)**

Other Therapies

- **Transurethral Microwave Thermotherapy**
  - **Temperatures of more than 45^0C can be achieved within prostatic tissue**
  - **Modest benefit (Nickel, 1996)**
- **Biofeedback (Nadler, 2002 and Anderson, 2005)**
- **Acupuncture (Chen, 2003)**

Prostatitis – still an enigma
Open questions I

- How long is the treatment of acute bacterial prostatitis?
- Diagnose chronic bacterial prostatitis only with recurrent UTI?
- Which is the correct test in CBP: 2-4-5 glass test? Evaluation dificult.
- The role of GPC and Atypicals, e.g. C. trachomatis, in CBP?
- Is the infection the cause or the consequence of an underlying disease?

Prostatitis – still an enigma
Open questions II

- FQ show good results, but placebo-controlled studies are needed.
- PK/PD parameters are not established for the treatment of CBP .
- Would higher dosing and shorter therapy with FQ improve outcome?
- FQ show good results, but placebo-controlled studies are needed.
- PK/PD parameters are not yet established for the treatment of CBP.
- Would higher dosing and shorter therapy with FQ improve outcome?

Prostatitis – still an enigma
Open questions III

- **There is no consensus on the cause of either CP/CPPS or asymptomatic inflammatory prostatitis.**

- **Proposed pathogenetic mechanisms include: infection, voiding or neuromuscular dysfunction, neuropathic pain, interstitial cystitis, and immune dysfunction**

- **Are inflammatory and non-inflammatory CPPS different entities?**

- **Is there a role of antimicrobial therapy in (inflammatory) CPPS?**

- **Placebo controlled studies in CPPS are necessary to evaluate any treatment effect.**

Prostatitis – an infectious diesease?

Summary and Conclusion I

- There is little debate (?) that infection is responsible for acute and chronic bacterial prostatitis.
- For ABP diagnosis is not difficult and antibiotic therapy is causative in many cases
- For CBP diagnostic evaluation is difficult
- Whether in CBP the infection is the cause or the consequence of an underlying disease, is not clear.
- Fluoroquinolones show good results, but placebo-controlled studies in CBP are needed and justified.

Pathogenesis of CPPS (III)
Summary and Conclusion II

- There is no consensus on the cause of either CP/CPPS or asymptomatic inflammatory prostatitis.

- Proposed pathogenetic mechanisms include: infection, voiding or neuromuscular dysfunction, neuropathic pain, interstitial cystitis, and immune dysfunction

- Therefore treatment modalities are “trial and error”. Placebo controlled studies are necessary to evaluate any treatment effect.

Schaeffer (chair), Anderson, Krieger, Lobel, Naber, Nakagawa, Nickel, Nyberg, Weidner – WHO Consultation, Paris 2005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