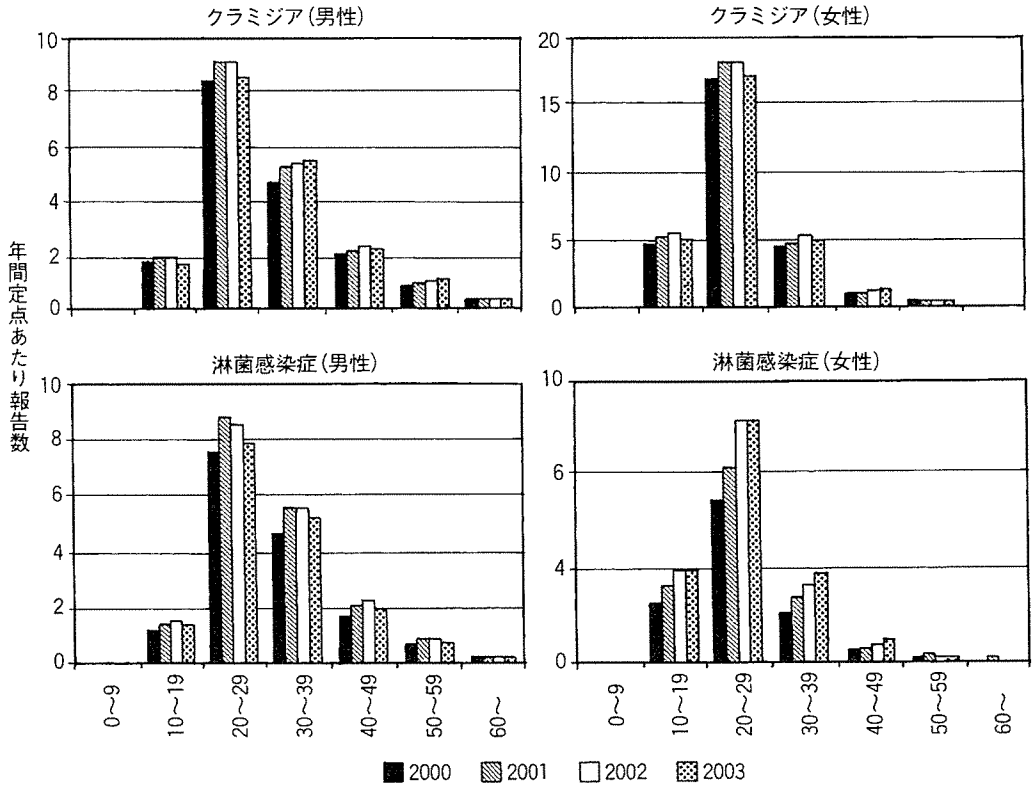


図2　感染症発生動向調査による各感染症の年次別，年齢別患者報告数
（橋戸らによる[1]，2004）

体的に女性患者の多いことが指摘されている．すなわち全STDでは女/男比は1.14で女性に優位であり（図4），年齢層では30歳を過ぎると男性優位であるが，15～19歳では女/男比が2.76，20～24歳では1.77，25～29歳は1.23と若い年齢層の女性へのSTDの浸透が著しい[4]．

東京地区におけるクラミジア・トラコマチスと淋菌の検出状況

東京都のSTD動向調査については，従来定点あたりの件数は性器クラミジア感染がもっとも多く，また定点あたりの発生数は男女ともいずれも全国平均を上回っている．一方，東京都予防医学協会は東京産婦人科医会の協力を得て，都内の診療所・病院から送られた子宮頸管材料によるクラミジア・トラコマチス（CT）（1987年以降）と淋菌（NG）（1992年以降）の両抗原検査の実施成績を毎年報告しているが[5]，CT陽性，つまり検出率は過去17年間で84,118例中11.1%（9,337例）で，NG検出率も過去12年間で13,772例中5.8%（802例）を占めCTのほぼ1/2であり，年齢別では東京都の定点観測成績に較べて15～19歳，20～24歳といった若年層における患者の増加が見られている（表2）．ただ両疾患とも2003年から2004年にかけて陽性率（検出率）の低下がみられる．なお妊婦のCT陽性率（検出率）は24,782例中6.0%（1,480例）で，年度別に差はみられないが，NGのそれは1,383例中3.1%（43例）で年度別のばらつきが大きい（以上の妊婦例は中絶例を含む）．

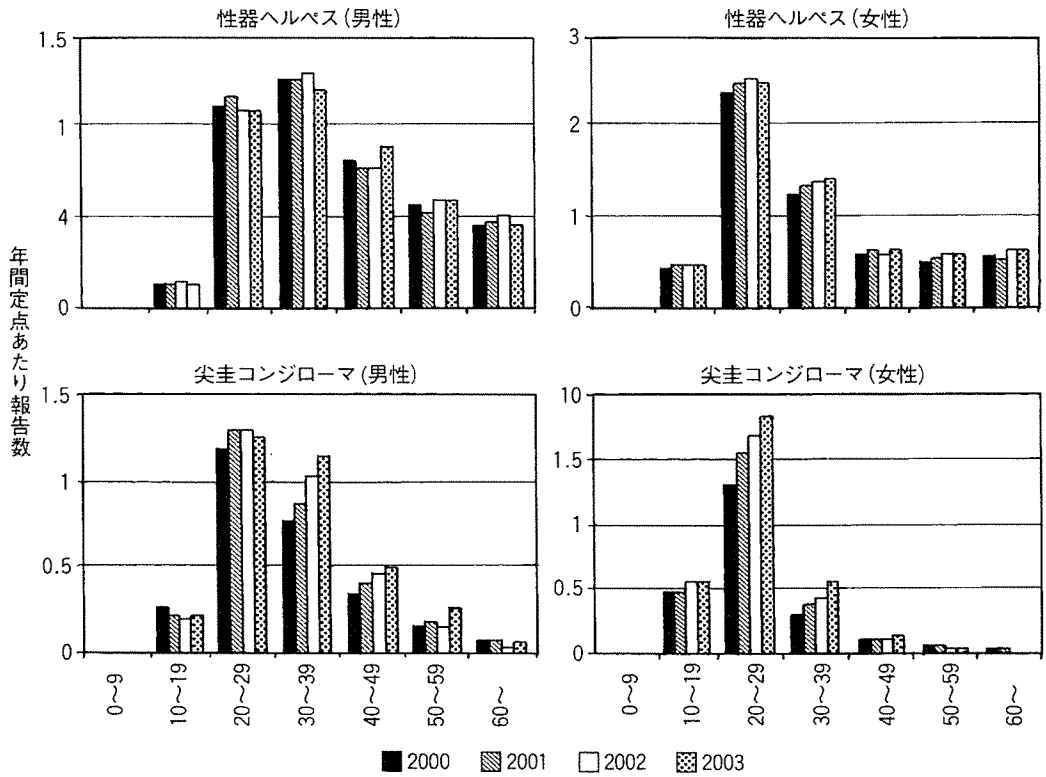
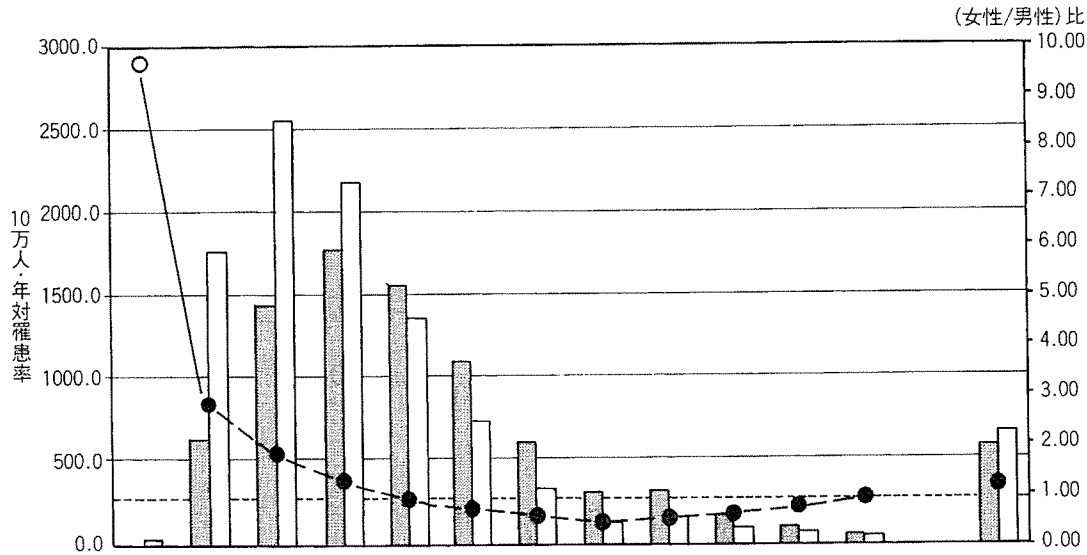


図3　感染症発生動向調査による各感染症の年次別，年齢別患者報告数
(橋戸らによる[1]，2004)

■■ 若年者に広がるSTDの背景

1990年代以降，若年者のSTDの増加に加えて，10代の若者における人工妊娠中絶が増え始め，若年者の性行動がリスクの高い行動に変容してきたことをうかがわせる．一方，若年者におけるSTDの認識度は一般に低く，HIV感染症については名前をほぼ知っているものの，クラミジア，淋菌の感染症については知識を持っていない者が多く，この点STD全般に関する教育，保健行政については具体的な施策が少ないと言わざるを得ない．

ただ性行動に関する研究は，近年ようやく本格的に行われるようになり，たとえば東京都の性教育研究会が3年ごとに実施している調査によると[6]，性行動の若年化が進み，高校3年生の性交経験率は1999年には男女とも40%前後に達している．大学生の調査でも，1年の入学時点で約21～24%の性交経験率が，4年時点では男64%，女74%と増加している．木原[7][8]によると，若年者の性行動の特徴は，①初交年齢の早期化，②セックスパートナーの数の増加，③パートナーとの性行為のタイプの多様化（経口性交など）に要約できるとされ，この年代ではセックスがカジュアル化していると指摘している．問題はコンドームの使用が近年減っていることで，性的パートナーの数の多い者ほどコンドーム使用率が低いことである．つまり，性行動の若年化が進む一方でコンドーム使用の減少が見られる．欧米では性的パートナー数の多い者でコンドーム使用率が高いと報告されているが，わが国ではこれと逆の減少が起こっており，コンドームの出荷量は年々減少している．このような性行動の結果生ずるのが性行為



	10～	15～	20～	25～	30～	35～	40～	45～	50～	55～	60～	65<		計
男性	1.9	636.2	1436.6	1758.4	1546.6	1091.5	607.7	325.8	329.6	168.3	109.4	59.8		585.8
女性	38.2	1756.9	2543.2	2171.3	1351.7	728.4	343.7	138.3	170.7	96.7	82.1	55.1		667.8
女性/男性	20.1	2.76	1.77	1.23	0.87	0.67	0.57	0.42	0.52	0.57	0.75	0.92		1.14

図4　全STD感染症の全国疫学調査
10万人・年対罹患率－2002年度調査
(熊本らによる[4], 2004)

表2　C.trachomatisおよびN.gonorrhoeaeの年齢別検出状況

	C.trachomatis			N.gonorrhoeae		
年　齢	検査数	陽性数	%	検査数	陽性数	%
＜9	30	5	16.7			
10～14	67	19	28.4	24	2	8.3
15～19	5,628	1,490	26.5	1,684	199	11.8
20～24	21,066	3,580	17.0	4,402	283	6.4
25～29	24,611	2,219	9.0	3,416	141	4.1
30～34	16,531	999	6.0	1,863	89	4.8
35～39	7,192	415	5.8	887	38	4.3
40～44	3,503	247	7.1	500	18	3.6
45～49	2,061	138	6.7	301	7	2.3
50～54	1,242	63	5.1	204	6	2.9
＞55	1,149	50	4.4	211	14	6.6
不　明	1,038	112	10.8	210	5	2.4
合　計	84,118	9,337	11.1	13,702	802	5.9

(松田らによる[5], 東京都予防医学協会, 2005)

ネットワーク（セクシャルネットワーク）であり，STD，HIV拡散の温床となることが危惧される．

■■ 性感染症の最近の話題

1．新しい検査法の登場ー迅速診断の立場から

性感染症の診断，治療上重要なことは起炎病原体の検出で，迅速検査法として免疫学的方法，分子生物学的方法による抗原検査の評価が高まっている．クラミジア・トラコマチス，淋菌の場合日常臨床面では遺伝子法である核酸検出法，核酸増幅法によるDNA診断法が多用されており，従来PCR法が代表とされてきたが，最近はRNA診断法も登場している．検査は子宮頸管材料，尿，男性尿道材料である．

PCR法はクラミジア・トラコマチス（CT）および淋菌（NG）のDNAを増幅し，それぞれの菌に特異的なDNAープロブを用いて検出する方法で，キットとしてアンプリコアSTD－1CT，アンプリコアSTD－1NGPがある．

SDA法は，DNA PolymeraseとRestriction Enzymeを利用したCTとNGを検出する核酸増幅法の一つでPCRと同等の検出性能を有している（BDプロブテックETー自動遺伝子増幅検査装置使用）．

近年新しくNGおよびCTによる尿道炎，子宮頸管炎などの検査法として登場したのが淋菌およびクラミジア・トラコマチス同時核酸増幅同定精密検査（アプティマcombo2クラミジア／ゴノレア）である[9]．本法の特徴は標的遺伝子がリボゾームRNAであることと，測定方法は核酸増幅法としてTMA（Transcription Mediated Amplication）法を用い，検出方法としてDKA（Dual Kinetic Assay）法を使用したことである．つまり，NGとCTを同一の検体から，同一の試験管内で同時にかつそれぞれ単独で検出することができる．本検査はハイリスク患者の場合一度にNG，CT感染の有無を検査できる方法であるほか重複感染（混合感染）の診断が早期に可能となり，検査の効率化と適切な薬剤選択が行える利点がある．

このほか前述のように両菌による咽頭炎の増加が指摘されているが，検査で重要なことは淋菌（NG）の場合，アンプリコアST－1 NG（PCR法）では口腔内常在菌であるN. subflava, N. cinereaの一部と交差反応を起こすため，咽頭検査には使用できないことである．

2．細菌性腟症

細菌性腟症（Bacterial Vaginosis：BV）は以前には非特異性腟炎，ガーバネレラ腟炎，ヘモフィルス腟炎，嫌気性菌腟症などとして知られていたが，現在では乳酸桿菌（Lactobacillus）が優勢の腟内細菌叢から好気性菌のGardnerella vaginalis，嫌気性菌のMobiluncus属などが過剰増殖した複数菌感染として起こる病態と考えられている[10][11]．

最近はこのほかにもいくつかの細菌（Clostridium phylumなど）の存在，関与が指摘されている．本症は再発率（約30%）が高いほか近年注目されるのは絨毛膜羊膜炎（CAM），羊水感染，早産が本症を有する妊婦での頻度が高くなることや子宮内膜炎（産褥含む），PID疾患との関連である．BVの症状であるが，約半数は無症候性で，自覚症状としての帯下感は軽く，腟分泌物の量も多くない．診断は腟分泌物の性状検査，染色検査に重点を置き，細菌培養の結果を参考にして行う．

診断基準（Amsel, Spiegel）として①灰色帯下②腟内ph＞5.0（4.5）③アミン臭の検出（採取した腟内容に10% KOHを加えるとアミン臭ー魚臭を生じる）．④Clue cellの検出（グラム染色で多型性で，小短グラム陰性桿菌が腟上皮細胞の周辺に多数散在した所見）があり，このうち3つが陽性であればほぼ診断できるが，これに前記の細菌培養成績（Gardnella vaginalisや嫌気性菌の検出など）が伴えば一層確実である．むしろBVの実用的でかつ迅速な診断法としては，腟内容の鏡検（グラム染色）所見と性状検査とを併せた判定法がすすめられる．これはグラム染色でClue cell，嫌気性彎曲桿菌など一般細菌，カンジダなどの証明が可能であるほかLactobacillusや白血球が少ないこともBVの診断根拠となる．近年腟内容のグ

ラム染色により細菌の多寡，菌の染色態度と形態からスコア化し，BVの診断に用いる試みが登場してきた（Nugent Score）（図5，6）．この方法は迅速診断には有用であるが，ただ鏡検には若干の習熟が求められ，検査する個人による判定の差を指摘するむきもある．

BVの治療には局所療法と内服療法があり，今のところ前者が主役である．局所療法ではクロラムフェニコール腟錠（100mg含有），1日1回7－10日間投与する．内服療法では欧米ではメトロニダゾール1日1.0g 7日間投与やクリンダマイシンクリームがあげられているが本邦では保険適用はない．そのほか乳酸菌製剤の局所（腟内）への試用も検討されており，治療法として今後注目されよう．

3．ガイドラインをふまえたSTDの治療

日本性感染症学会では，1996年にCDCのガイドラインを参考に性感染症の検査，治療方針を作成したが，保険適用における日本の慣行の投与法との不整合などがあり，その後再作成を行い，性感染症診断・治療ガイドライン（対象疾患10数種）を公表，2002年，2004年には薬剤耐性淋菌の増加，新しい抗HIV薬の開発などを踏まえ，さらに改定を行った[10]．

性感染症の治療は病原微生物の種類により治療法が異なり，薬物療法が主体で，疾患，病原微生物に合った治療法と薬剤を選択する（表3）．な

図5　細菌性腟症（Nugent Score 10）

図6　正常腟内容（乳酸桿菌）

表3　主なる細菌性性感染症の治療

起炎菌	治療薬	使用法	備　考（FDAの妊娠危険区分）
	（経口）		
クラミジア・トラコマチス	アジスロマイシン（AZM）	1回1,000mg単回	B
	クラリスロマイシン（CAM）	1回200mg 1日2回（7日間）	C
	＊ガチフロキサシン（GFLX）	1回200mg 1日2回（7日間）	C
	＊レボフロキサシン（LVFX）	1回100mg 1日3回（7日間）	C
	＊トスフロキサシン（TFLX）	1回150mg 1日2回（7日間）	C
	＊ミノサイクリン（MINO）	1回100mg 1日2回（7日間）	D
淋　菌	（注射）		
	セフトリアキッソ（CTRX）	1回1,000mg静注（単回）	B
	セフオジジム（CDZM）	1回1,000mg静注（単回）	B
	＊スペクチノマイシン（SPCM）	1回2,000mg静注（単回）	D
	（経口）		
	セフイキレム（CFIX）	1回 200mg 1日2回（3日間）	B

＊妊婦には使用しない　　（性感染症診断・治療ガイドライン[10]）

かでも淋菌感染症には近年ニューキノロン耐性株が急増し，β-ラクタム薬にも感受性の低下がみられることに留意し，薬剤を選択するが，セフトリアキソン（CTRX），スペクチノマイシン（SPTM）の単回投与の有用性が指摘されており，性器クラミジア感染症にはニューキノロン，クラリスロマイシンの内服7日間投与のほかアジスロマイシン（AZM）の内服1.0g投与（1日間のみ）も登場した．なお両感染症ともテトラサイクリン系やアミノ配糖体系やニューキノロン薬は妊婦には使用しない．

もちろん上記のスペクチノマイシンは妊婦の淋菌感染症には使用しない．表3に参考までにFDAの妊娠危険区分を付記した．ウイルス感染症にはアシクロビル，バラシクロビル内服や，ビダラビン軟膏が有効な性器ヘルペスを除くと，薬物療法と検査法の確立されていない疾患も多く，有効な薬剤も限られている．ただHIV感染/エイズの治療薬では多剤併用療法が行われ，発症予防効果がみられている．問題は性感染症ではパートナーへの治療が必要であるが，わが国ではパートナーの治療対策が極めて不十分な現状にある．

おわりに

性感染症（STD）は複雑な病態と後遺症，合併症の恐れを含んでおり，制御の基本は予防対策の重要性（検診率の向上，コンドームの使用，性教育）と適切な治療である．わが国では21世紀における母子保健の国民運動計画（2001年～2010年）として「健やか親子21」（厚労省ほか）という推進事業が発足し，その大きな柱の一つに10代のSTD罹患率の減少が取りあげられており，これからの成果が期待される．

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Case Report

Chlamydial seminal vesiculitis without symptomatic urethritis and epididymitis

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Abstract We previously reported that seminal vesiculitis was associated with acute epididymitis, and that *Chlamydia trachomatis* was the major causative pathogen for infection of the seminal vesicle, suggesting that seminal vesiculitis was a discrete disease entity. In this paper, we report two patients with bacteriologically and cytologically proven seminal vesiculitis who had asymptomatic urethritis but not epididymitis. The clinical courses of these patients suggest that chlamydial seminal vesiculitis may be a cause of asymptomatic infection of the urethra or subsequent development of acute epididymitis.

Key words acute epididymitis, and seminal vesicles, *Chlamydia trachomatis*, seminal vesiculitis, urethritis.

Introduction

We previously reported that seminal vesiculitis was closely linked with acute chlamydial epididymitis, and that *Chlamydia trachomatis* was frequently isolated from the seminal vesicles.[1] Thus, we speculated that the microorganism induced the disease process from urethritis to acute epididymitis through seminal vesiculitis. In this report, we present two patients with bacteriologically and cytologically proven seminal vesiculitis who had asymptomatic urethritis but not epididymitis

We discuss the clinical implications of chlamydial seminal vesiculitis as a single disease entity, in which the disease is not associated with symptomatic urethritis or acute epididymitis.

Case report

Case 1

A 23-year-old heterosexual man visited one of our clinics complaining of hematospermia. He had no specific voiding symptoms, urethral discharge or history of antimicrobial treatment. His female sexual partner was diagnosed as having chlamydial cervicitis and had already received appropriate antimicrobial treatment. Physical examination revealed no remarkable abnormalities in his urethral meatus, penis, testis, epididymis or prostate. No urethral discharge was found. Microscopic examination revealed two to three white blood cells (WBC) per high power field (h.p.f.) in sediment of the first voided urine, and many WBC per h.p.f. in semen. Transrectal ultrasonography (TRUS) imaging revealed dilation and cystic change on the right-side seminal vesicle (Fig. 1). After obtaining written informed consent, we did transperineal puncture of the seminal vesicles under TRUS. A smear sample of fluid from the right seminal vesicle had many WBC, but that from the left had no inflammatory finding. *C. trachomatis* was detected using a commercially available nucleic acid amplification test kit in first-voided urine, semen, and right seminal vesicle fluid, but not in fluid from the left vesicle. After treatment with oral levofloxacin 100 mg three times daily for 2 weeks, hematospermia disappeared with no detection of *C. trachomatis* in either the first-voided urine or right seminal vesicle fluid.

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Case 2

A 32-year-old heterosexual man visited us for consultation of dense semen which he had first noticed 3 weeks earlier. He had a chance to contract a sexually transmitted disease 4 weeks before the visit. At the time of his visit, he had some discomfort of the urethra on voiding and pain on ejaculation. Physical examination revealed no remarkable abnormal findings in the genitalia. No urethral discharge was identified. Microscopic examination revealed one to two WBC per h.p.f. in sediment of the first voided-urine and five to six WBC in the expressed prostatic secretion (EPS), and many WBC per h.p.f. in semen. TRUS imaging revealed dilation and cystic change in the seminal vesicle on the right side. Only cystic change was observed in the seminal vesicle on the left side. *C. trachomatis* was detected in first-voided urine, semen, EPS, and right seminal vesicle fluid. He was treated with clarithromycin 200 mg twice daily for 2 weeks. After treatment, the semen character became normal and *C. trachomatis* was not detected in the first-voided urine sample or semen.

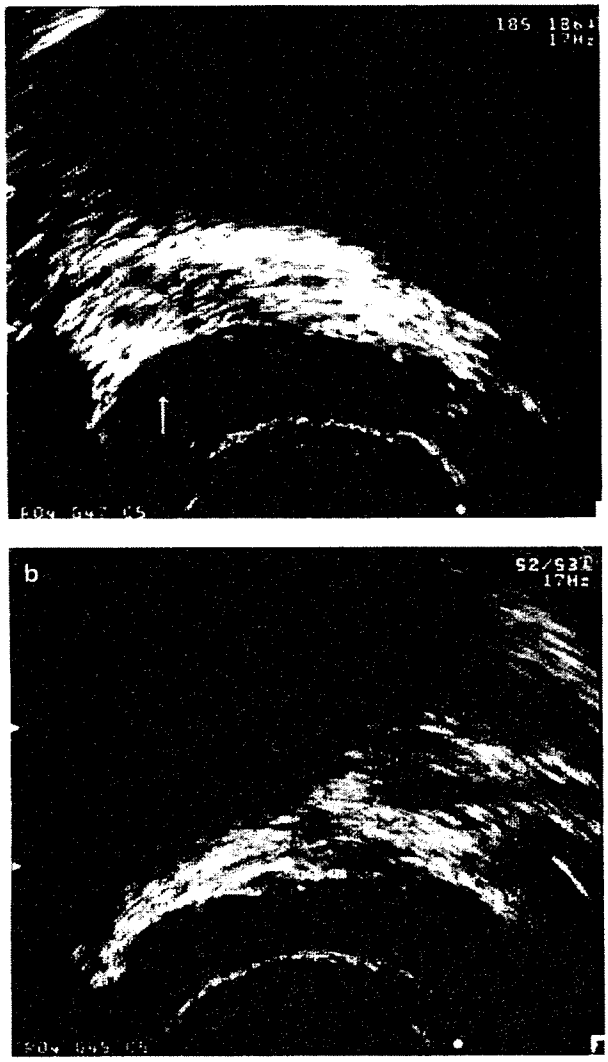

Fig. 1 Seminal vesicle images by transrectal ultrasonography (case 1). (a) The right-side seminal vesicle was enlarged and dilated with multicystic changes. Arrows indicate cystic changes. (b) The left-side seminal vesicle was not dilated.

Discussion

As we indicated in a previous study, chlamydial seminal vesiculitis is a distinct clinical entity.[1] Since the study demonstrated that most of the heterosexual younger patients who developed acute epididymitis simultaneously had chlamydial urethritis and seminal vesiculitis, we speculated that the infection in the seminal vesicle preceded development of acute chlamydial epididymitis in some patients. However, the issue remains to be determined.

The two current patients had isolated chlamydial seminal vesiculitis without any obvious clinical symptoms or signs of epididymitis, suggesting that the disease might occur before the development of epididymitis as Krishnan and his colleague speculated,[2] although it would be associated with epididymitis in the subsequent follow up unless they were treated with antimicrobials.

It is also an intriguing finding that these two patients seemed to be asymptomatic even when they were revealed to have a positive result for *C. trachomatis* in the first-voided urine. We recently reported that the detection rate of *C. trachomatis* in the first-voided urine was 4% in 200 young men who were otherwise healthy and had no genital organ-related symptoms. Thus, the rate of latent or unrecognized infection of *C. trachomatis* in men is almost the same as found in women.[3,4] Seminal vesiculitis caused by this organism may serve as a source of its latent infection. However, further studies will be needed to provide definitive evidence.

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ORIGINAL ARTICLE

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Analysis of clinical manifestations of male patients with urethritis

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Abstract Almost all physicians involved in treating sexually transmitted infections recognize the specific clinical manifestations of patients with urethritis. However, in previous studies, the diagnosis of gonococcal urethritis was based on cultures or staining methods. In this study, we examined in detail the clinical manifestations of patients with urethritis diagnosed by the nucleic acid amplification test (NAAT). A total of 154 patients with male urethritis were included in the study. The NAAT could distinguish 64 patients with gonococcal urethritis, 45 patients with chlamydial urethritis, and 45 patients with nongonococcal and nonchlamydial urethritis. Forty-three (67.2%) patients with gonococcal urethritis had more severe symptoms, i.e., moderate or profuse urethral discharge, and cloudy or purulent discharge, than patients with chlamydial urethritis, nongonococcal and nonchlamydial urethritis. There were 39 (86.7%) patients in the chlamydial urethritis group with mild symptoms, clear discharge or none, and moderate or profuse discharge. Although the diagnosis of male urethritis can be performed by microbiological examination, the typical symptoms help us to distinguish each type of urethritis and understand this kind of disease.

Key words Male urethritis · Urethral discharge · Nucleic acid amplification test

Introduction

Male urethritis due to sexually transmitted infections (STIs) is generally classified as gonococcal urethritis (GU) or nongonococcal urethritis (NGU). Moreover, NGU is divided into chlamydial urethritis (CU) and nongonococcal and nonchlamydial urethritis (NGNCU). Almost all physicians involved in the treatment of STIs recognize that the urethral discharge of GU is generally purulent or cloudy, while that of NGU is clear.[1] However, in most reports, the diagnosis of GU was determined by culture or microscopic findings of Gram-negative diplococci. Therefore, some cases of GU might erroneously have been classified as NGU because the sensitivity of the culture method can be lower than that of the nucleic acid amplification test (NAAT).[2,3] From the point of view of the microbiological diagnosis of male urethritis, the NAAT is the most precise tool currently available because of its higher sensitivity and specificity. This means that, for the physician involved in the treatment and diagnosis of STIs, it is necessary to assess the various symptoms of male urethritis diagnosed by a NAAT in order to understand its pathology clearly. In other words, we should learn the symptoms of patients with male urethritis diagnosed by the NAAT, which has a high sensitivity and specificity for diagnosis. In this study, therefore, we analyzed in detail the symptoms of male patients with urethritis diagnosed by the NAAT.

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Patients and methods

We analyzed the symptoms of male patients with urethritis who visited our clinics from January through July 2005. The definition of urethritis in this study included the symptoms of pain on miction, urethral discharge, urethral itching, and a reddish penile glans. We also included patients without apparent symptoms, but in whom *Neisseria gonorrhoeae* (*N. gonorrhoeae*) or *Chlamydia trachomatis* (*C. trachomatis*) had been detected. The microbiological diagnosis of ure-

Table 1. The full findings of urethral discharges and the appearance of the penile glans

Findings	GU	CU	NGNCU
Quantitative findings[a]			
None	1 (1.6%)	25 (55.6%)	20 (44.4%)
Scanty	20 (31.3%)	18 (40.0%)	21 (46.7%)
Moderate	31 (48.4%)	1 (2.2%)	3 (6.7%)
Profuse	12 (18.8%)	1 (2.2%)	1 (2.2%)
Qualitative findings[b]			
None	1 (1.6%)	24 (53.3%)	19 (42.2%)
Clear	2 (3.1%)	16 (35.6%)	17 (37.8%)
Cloudy	22 (34.4%)	4 (8.9%)	6 (13.3%)
Pulurent	39 (60.9%)	1 (2.2%)	3 (6.7%)
Findings of the penile glans[c]			
None	13 (20.3%)	32 (71.1%)	21 (46.7%)
Mild	37 (57.8%)	12 (26.7%)	20 (44.4%)
Extreme	14 (21.9%)	1 (2.2%)	4 (8.9%)

[a] Scanty, discharge only on stripping the urethra; moderate, discharge at the external urethral meatus; profuse, discharge spontaneously dripping from the external urethral meatus
[b] Clear, mucoid, translucent, no discoloration; cloudy, opalescent, whitish; purulent, yellow to green
[c] None, no redness on the penile glans; mild, slightly reddish change on the penile glans; extreme, extremely reddish change on the penile glans
GU, gonococcal urethritis; CU, chlamydial urethritis; NGNCU, nongonococcal and non-chlamydial urethritis

thritis was determined using a commercially available NAAT (Amplicor STD-1; Roche Diagnostic Systems, Branchburg, NJ, USA), and the results were divided into GU, CU, and NGNCU groups. In the clinics, expert urologists looked over and recorded the full findings of urethral discharge[1] and the appearance of the penile glans (Table 1) in routine clinical examinations. The white blood cell (WBC) count in the sediment of first-voided urine was also documented. The WBC count was divided into 4 categories: 0 WBC per high power field (h.p.f.), 1–4 WBCs per h.p.f., 5–14 WBCs per h.p.f., and 15 or more WBCs per h.p.f. Interviews revealed the episodes which may have been responsible for the infection, and the main complaints which led to the visit to the clinic. The following reasons for infection were found: doing commercial sexual worker (CSW) with vaginal sexual intercourse or oral sexual intercourse, having a regular sexual partner, having a casual sexual partner, and unknown. We investigated the chief complaints of strong or mild pain on miction, and the desire for an examination for STIs because of positive STI pathogens in the sexual partner. Statistical analyses were done by the χ^2 test, and partly by Fisher's exact probability test.

Results

A total of 154 patients with male urethritis were included in this study. Their median age was 28 (16–52) years. The NAAT could identify 64 patients (41.5%) with GU, including 7 with both gonococcal and chlamydial urethritis, 45 (29.2%) with CU, and 45 (29.2%) with NGNCU. The full findings of the medical examinations are summarized in Table 1. Statistically significant differences ($P < 0.0001$) between GU and CU were found for the quantitative findings, the qualitative findings, and penile appearance. Similarly, significant differences between GU and NGNCU were found for the quantitative findings ($P < 0.0001$), the qualitative findings ($P < 0.0001$), and penile appearance ($P = 0.0087$). However, there were no significant differences in the quantitative and qualitative findings between CU and NGNCU, although there was a significant difference ($P = 0.0478$) in penile appearance. In addition, we compared the combined symptoms with scanty (quantitative) findings or none, and clear (qualitative) findings or none, as mild symptoms, with those with moderate or profuse (quantitative) findings, and cloudy or purulent (qualitative) findings, as serious symptoms. Of the patients with GU, there were 43 (67.2%) with serious symptoms and 3 (1.6%) with mild symptoms. Of the patients with CU, there were 39 (86.7%) with mild symptoms and just 1 with serious symptoms. Of the patients with NGNCU, 34 (75.5%) had mild symptoms and 2 (4.4%) had serious symptoms. The WBC count in the urinary sediment of patients with GU was higher than for those with CU or NGNCU (Table 2). There were significant differences in the WBC count between GU and CU ($P < 0.0001$), GU and NGNCU ($P < 0.0001$), and CU and NGNCU ($P = 0.0446$). In addition, there were significant differences between the WBC count and the quantitative findings ($P = 0.0009$), and the WBC count and the qualitative findings ($P = 0.0028$) in patients with GU. However, there were no significant differences in those factors in patients with CU and NGNCU. Only one GU patient, who was diagnosed despite atypical symptoms, complained of pain on miction. That patient had no urethral discharge, no abnormal penile appearance, and 1–4 WBCs per h.p.f. in his first-voided urine. There were 5 CU patients who were diagnosed in spite of atypical symptoms. Five patients had moderate or profuse, and cloudy or purulent, urethral discharge. In addition, 4 of these 5 patients had a reddish change to the penile glans. The opportunities for infection and the chief complaints are summarized in Table 3. The probable cause

Table 2. Distribution of the white blood cell (WBC) count in the urinary sediment of patients with urethritis

WBC count	GU	CU	NGNCU
0 WBC per h.p.f.	0	2 (4.4%)	1 (2.2%)
1–4 WBCs per h.p.f.	5 (7.8%)	9 (20.0%)	21 (46.7%)
5–14 WBCs per h.p.f.	5 (7.8%)	15 (33.3%)	13 (28.9%)
15 or more WBCs per h.p.f.	54 (84.4%)	19 (42.2%)	10 (22.2%)

h.p.f., high power field

Table 3. Opportunities for infection and chief complaints

	GU	CU	NGNCU
Opportunity for infection			
Commercial sexual worker	28[a] (43.8%)	5[b] (11.1%)	16[c] (35.6%)
Regular sexual partner	15 (23.4%)	32 (71.1%)	20 (44.4%)
Casual sexual partner	13 (20.3%)	5 (11.1%)	6 (13.3%)
Unknown	8 (12.5%)	3 (6.7%)	3 (6.7%)
Chief complaints			
Pain on miction (strong)	46 (72.0%)	4 (8.9%)	5 (11.1%)
Pain on miction (mild)	16 (25.0%)	25 (55.6%)	33 (73.3%)
STI examination	0	12 (26.7%)	4 (8.9%)

[a] Three by vaginal sex, 24 by oral sex, and 1 by both vaginal and oral sex
[b] Four by oral sex and 1 unknown
[c] One by vaginal sex, 12 by oral sex, 2 by both vaginal and oral sex, and 1 unknown

of infection with GU was mostly CSW, but that of CU was mostly the sexual partner. In addition, most GU patients were infected by oral sex. The causes of infection with NGNCU were both CSW and the sexual partner. There were significant differences between the chances of infection with GU and CU ($P < 0.0001$), and those for CU and NGNCU ($P = 0.0348$); however, there was no significant difference between those for GU and NGNCU ($P = 0.1272$). In the analysis of symptoms, strong pain on miction was found predominantly in patients with GU, and mild pain was predominant in patients with CU ($P < 0.0001$).

Discussion

Male urethritis is generally diagnosed based on urinalysis, microbiological examination, and symptoms. In adolescents and younger age groups, male urethritis is divided into GU, CU, and NGNCU based on the results of a microbiological examination. Almost all physicians working in STI clinics recognize that patients with GU have moderate or profuse, and cloudy or purulent, urethral discharge, and a reddish change to the penile glans, whereas it is generally supposed that NGU, including CU and NGNCU, patients have scanty and clear urethral discharge. Rothenberg and Judson[1] reported that 96% of 1795 GU patients diagnosed by culture had cloudy or purulent urethral discharge. Interestingly, in that study, 33% of 3594 NGU patients had clear urethral discharge, and 56% of them had cloudy or purulent urethral discharge. We agree with the diagnosis of GU in that report because we always encounter cloudy or purulent urethral discharge in that situation. However, we do not agree with the diagnosis of NGU because we usually see clear urethral discharge in NGU patients. In that situation, the diagnosis of GU must be correct because *N. gonorrhoeae* can be isolated by culture. However, some cases of GU might mistakenly be classified as NGU because the sensitivity of the culture method could be lower than that of the NAAT.[2,3] Therefore, we studied each symptom in patients with GU, CU, and NGNCU which was diagnosed based on the NAAT. Indeed, it is known that urethral discharges are usually profuse and purulent in men with GU, but are generally scant and mucoid in men with NGU.[4] In this study, we confirmed that the symptoms of patients with GU were more severe, in terms of the quantity and quality of the urethral discharge and the penile appearance, than those of patients with CU and NGNCU. There was only 1 patient with atypical symptoms, no urethral discharge, and no abnormal penile appearance in the GU group. Thus, we can diagnose GU by interpreting the typical symptoms of moderate or profuse, cloudy or purulent, urethral discharge and a reddish change in the penile glans, although microbiological diagnosis with the NAAT could be important. However, we should employ the NAAT for both *N. gonorrhoeae* and *C. trachomatis* owing to the high frequency of concurrent chlamydial infection. Our results showed that 11.0% of patients with GU had concurrent chlamydial infection.

The symptoms of patients with CU differed from those of patients with GU. In this study, 95.6% of patients with CU had only scanty urethral discharge or none, and 88.9% had clear urethral discharge or none. In addition, 71.1% of patients with CU had no abnormality in the appearance of the penile glans. In general, infections caused by *C. trachomatis* are more often characterized by no symptoms or by milder symptoms than is the case for gonococcal infections.[5] Thus, our results are in accord with the general data. However, the symptoms of patients with NGNCU

were similar in terms of the quantitative and qualitative findings of urethral discharge, but the reddish change in the penile glans in these patients was more frequent than in those with CU. There were no significant differences in the severity of symptoms between the patients with CU and NGNCU, although the symptoms of patients with NGNCU were slightly worse. *Mycoplasma genitalium* is the established pathogen of NGNCU, and the prevalence of *M. genitalium*-positive NGNCU cases is from 18.4% to 45.5% of all NGNCU patients.[6] *M. genitalium*-positive men had symptomatic urethritis more often than those infected with *C. trachomatis*.[7] Although asymptomatic *M. genitalium* infection in the urethra is less prevalent than asymptomatic *C. trachomatis* infection, clinical manifestations of NGNCU can be confused with those of CU.

First-voided urine sediment analyses showed that patients with GU had higher WBC counts than those with CU and NGNCU. Interestingly, patients with NGNCU had lower WBC counts than those with CU. We could confirm that there were few patients with GU who had no pyuria or a very low WBC count, and such findings could overturn the diagnosis of GU. On the other hand, discriminating between CU and NGNCU based on urinary findings was quite difficult. The opportunities for infection were very different between GU and CU. The circumstances of GU infection were mostly CSW and oral sex. Those of CU infection were mostly from the sexual partner. In Japan, it has been pointed out that *N. gonorrhoeae* is detected in pharyngeal specimens,[8] and pharyngeal *N. gonorrhoeae* may be infectious for urethritis. With recent changes in sexual behavior, this new transmission route can be a problem in diagnosis and treatment. As the chief complaint leading to a visit to a clinic, patients with GU had relatively stronger pain than those with CU or NGNCU. Unfortunately, we could not use a pain scale to obtain objective results. However, we confirmed that all patients with GU visited the clinic with pain on miction as their chief complaint. Most patients with CU or NGNCU had mild pain on miction, and some visited the clinic with no apparent symptoms.

In conclusion, we assessed the clinical manifestations of patients with GU, CU, or NGNCU. Patients with GU had more serious symptoms with regard to urethral discharge and penile appearance than those with CU or NGNCU. Although the diagnosis of male urethritis can be performed by microbiological examination, the typical symptoms help us to distinguish each type of urethritis. When we investigated urethritis by the NAAT, we could diagnose each type correctly. Thus, our results should help physicians to understand and diagnose these diseases.

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ORIGINAL ARTICLE

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Detection of *Mycoplasma genitalium*, *Mycoplasma hominis*, *Ureaplasma urealyticum*, and *Ureaplasma parvum* DNAs in urine from asymptomatic healthy young Japanese men

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Abstract The aim of this study was to estimate the detection rates of *Mycoplasma* and *Ureaplasma*, which are presumptive causes of sexually transmitted diseases (STDs), in young men in Sapporo, Japan. In addition, we examined the associations among *Chlamydia trachomatis*, *Mycoplasma*, and *Ureaplasma*. A survey of 100 asymptomatic healthy male volunteers was carried out. *C. trachomatis*, *Mycoplasma genitalium*, *Mycoplasma hominis*, *Ureaplasma urealyticum*, and *Ureaplasma parvum* in first-voided urine specimens were detected by polymerase chain reaction assay. Detection rates were 1% for *M. genitalium*, 4% for *M. hominis*, 12% for *U. urealyticum*, and 23% for *U. parvum*. *C. trachomatis* was detected in 6% of samples. No *M. hominis*, *U. urealyticum*, or *U. parvum* was detected simultaneously in any sample positive for *C. trachomatis*. The detection rate of urinary *M. genitalium* was extremely low, which is similar to previous reports from Japan. The detection rates of urethral *U. urealyticum* and *U. parvum* were significantly related to sexual activity. We need to determine whether these pathogens have a role in the sexual transmission of disease or just in colonization.

Key words Asymptomatic · Male · *Mycoplasma* · *Ureaplasma* · *Chlamydia* · Japan

Introduction

Recent sexually transmitted disease (STD) surveillance revealed a significantly high incidence of such diseases in young men and women.[1] In men, gonococcal urethritis is one of the major STDs, and nongonococcal urethritis caused by *Chlamydia trachomatis* and *Mycoplasma genitalium* are also common. Although *C. trachomatis* and *M. genitalium* have been established as common pathogens of nongonococcal urethritis, *Mycoplasma hominis*, *Ureaplasma urealyticum*, and *Ureaplasma parvum* have also been presumed to be potential pathogens for this condition. However, there have been few reports on the detection rates of urinary *Mycoplasma* and *Ureaplasma* in asymptomatic healthy men in Japan. The aim of this study was to determine the detection rates of those pathogens in asymptomatic healthy young men in Sapporo, Japan. In addition, we examined the associations among *C. trachomatis*, *Mycoplasma*, and *Ureaplasma*.

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Patients and methods

The study included 100 healthy male volunteers who were recruited from university students for 2 weeks by advertisements that explained the study design and its clinical relevance. They were asked to respond to a self-administered questionnaire for information about age, marital status, history of STDs, average frequency of sexual intercourse in the previous 3 months, and number of current sex partners. The average frequency of intercourse was categorized as 3–5 times per week, 1–2 times per week, 3–4 times per month, 1–2 times per month, less than once per month, or none.[2] We defined men with no sexual intercourse in the previous 3 months as sexually inactive, and those who had sexual intercourse in that period as sexually active.[3] In addition, the men were asked to confirm that they did not have any symptoms such as pain on miction or ejaculation. The protocol of this study was approved by the Ethical Committee of Sapporo Medical University. Both verbal and written informed consent were obtained from each subject.

M. genitalium, *M. hominis*, *U. urealyticum*, *U. parvum*, *C. trachomatis*, and *Neisseria gonorrhoeae* were all detected in first-voided urine. The detection of *M. genitalium*, *M. hominis*, *U. urealyticum*, and *U. parvum* was carried out with the special polymerase chain reaction (PCR) method reported by Yoshida et al.[4] These tests were done in a commercial laboratory (Mitsubishi Kagaku Bio-Clinical

Table 1. The backgrounds of the healthy male volunteers

Age (years)	Average 22.45 (±2.9)	Median 22 (18–35)
Marital status	Single	99
	Married	1
History of STD	Genital herpes	1
	Urethritis	3
Average frequencies of sexual intercourse	3–5 times/week	5
	1–2 times/week	24
	3–4 times/month	18
	1–2 times/month	16
	Less than once per month	12
	None	25
Number of current sexual partners	More than 3	6
	One	52
	None	42

Table 2. *C. trachomatis*, *Mycoplasma*, and *Ureaplasma* detected

Number	*Chlamydia trachomatis*	*Mycoplasma genitalium*	*Mycoplasma hominis*	*Ureaplasma urealyticum*	*Ureaplasma parvum*
5	+	–	–	–	–
1	+	+	–	–	–
1	–	–	+	+	+
2	–	–	+	–	+
1	–	–	+	+	–
2	–	–	–	+	+
18	–	–	–	–	+
8	–	–	–	+	–
62	–	–	–	–	–
Total 100	6	1	4	12	23

+, positive; –, negative

Table 3. Comparison between sexual activity and the detection of *Mycoplasma* and *Ureaplasma*

Average frequency of sexual intercourse	*Mycoplasma genitalium*	*Mycoplasma hominis*	*Ureaplasma urealyticum*	*Ureaplasma parvum*	Total
3–5 times/week	0	1 (25%)	3 (27%)	1 (4%)	5
1–2 times/week	0	1 (25%)	3 (27%)	8 (35%)	24
3–4 times/month	1 (100%)	1 (25%)	2 (18%)	6 (26%)	18
1–2 times/month	0	1 (25%)	2 (18%)	6 (26%)	16
Less than once per month	0	0	1 (9%)	1 (4%)	12
None	0	0	0	1 (4%)	25
Total	1	4	11	23	100

Laboratories, Tokyo). Detection of *C. trachomatis* and *N. gonorrhoeae* in first-voided urine was carried out with a commercially available PCR assay (Amplicor STD-I; Hoffmann-La Roche, Basel, Switzerland). Statistical analysis was done by the Kruskal–Wallis test.

Results

The backgrounds, including the sexual activity, of the healthy male volunteers are summarized in Table 1. One-quarter of the participants were sexually inactive. The detection rates of *M. genitalium*, *M. hominis*, *U. urealyticum*, and *U. parvum* were 1%, 4%, 12%, and 23%, respectively (Table 2). In the 75 sexually active men, the detection rates were summarized as *M. genitalium* in 1.3%, *M. hominis* in 5.3%, *U. urealyticum* in 16.0%, and *U. parvum* in 29.3% (Table 3). The detection rate of *U. urealyticum* was significantly correlated with the frequency of sexual intercourse ($P = 0.0072$). In addition, there was also a statistically significant difference between the detection rate of *U. parvum* and the frequency of sexual intercourse ($P = 0.0131$). There was no statistical difference between the rate of *M. hominis* and the frequency of sexual intercourse. Although *C. trachomatis* was detected in 6% of participants, *M. hominis*, *U. urealyticum*, and *U. parvum* DNAs were not detected in the samples which were positive for *C. trachomatis*. *N. gonorrhoeae* was not detected in any sample.

Discussion

Although *C. trachomatis* is the principal pathogen of nongonococcal urethritis (NGU), *M. genitalium* plays an important role in the development of male NGU.[5] However, it has been suggested that some strains of *Mycoplasma* and *Ureaplasma* are potentially associated with male urethritis. Yoshida et al.[4] established the phylogeny-based identification of PCR products, and detected *M. genitalium*, *M. hominis*, *U. urealyticum*, and *U. parvum* as pathogens of NGU. Indeed, *U. urealyticum* may also be involved.[6] However, there are not enough data to be completely sure that *U. urealyticum*, *U. parvum*, and *M. hominis* are actively involved in male NGU.

The detection rates of urinary *M. genitalium* were 1% in total, and 1.3% in asymptomatic sexually active men. Another report showed that 1.1% of asymptomatic Japanese men were positive for *M. genitalium*.[7] In reports from New Orleans and Denmark, 7% and 9%, respectively, of asymptomatic men were positive for *M. genitalium*.[8,9] The reasons for the differences in the data between Japan and other countries are not clear. One speculation was that the incidence of STDs was higher in New Orleans.[8] Recently, Falk et al.[10] reported that *M. genitalium* caused symptoms of urethritis among males with STD more often than *C. trachomatis*. This report suggested that *M. genitalium* could cause more active and more symptomatic male urethritis than *C. trachomatis*.

The detection rates of *U. urealyticum* and *U. parvum* were relatively higher than those of other STD pathogens in this study. In a study reported by Yoshida et al.,[4] the detection rates of *U. urealyticum* and *U. parvum* in the urine specimens of asymptomatic men were 9.5% (4 of 42) and 21.4% (9 of 42), respectively. Interestingly, the detection rate of *U. parvum* in the urine specimens of asymptomatic men was much higher than for patients with nongonococcal urethritis. Although we need additional data to determine whether *U. parvum* and *U. urealyticum* are definitive pathogens of urethritis, our data suggest that those pathogens might colonize in the urethra without any symptoms.

In addition, we examined the associations among *C. trachomatis*, *Mycoplasma*, and *Ureaplasma*. The results showed that positive *C. trachomatis* had no relationship to positive *M. hominis*, *U. urealyticum*, or *U. parvum*. Most positive samples were obtained from the volunteers in the sexually active group, and the positivities were presumed to be associated with sexual activity. The reason why these pathogens could not be detected simultaneously remains unclear. In a previous report,[4] 45.7% (21 of 46) of specimens from nongonococcal nonchlamydial urethritis cases were positive for *Mycoplasma* or *Ureaplasma*. In addition, 17.4% (8 of 46) of the specimens from these cases were positive for *U. urealyticum* and 6.5% (3 of 46) were positive for *U. parvum*. It is assumed that there is a different mechanism for *Mycoplasma* and *Ureaplasma* to attach to or colonize the urethra from that for *C. trachomatis*. At present, we do not know if those organisms are active pathogens for male urethritis because little is known about their pathogenicity.

We determined the detection rates of asymptomatic potential STDs in healthy male volunteers in Sapporo, Japan. They were 1.3% for *M. genitalium*, 5.3% for *M. hominis*, 16.0% for *U. urealyticum*, and 29.3% for *U. parvum* in asymptomatic sexually active men in this study. Our study showed that the detection rates of urinary *M. hominis*, *U. urealyticum*, and *U. parvum* in asymptomatic men were not negligible, although asymptomatic *M. genitalium* urethral infection was extremely uncommon. The detection rates of *U. urealyticum* and *U. parvum* were higher than those for the other pathogens, and our results suggested that their detection was associated with sexual activity. In the future, we need to clarify whether those pathogens simply colonize the urethra, and the role played in their transmission to the sexual partner in the pathogenicity of cervicitis.

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今月の症例

尖圭コンジローマに対するインターフェロン筋注療法の試み*

萩原　正則[*1]・本田まりこ[*1]・相澤　良夫[*2]
松尾　光馬[*3]・中川　秀己[*3]

要約 64歳，ヘテロセクシャルの男性．半年前より肛門周囲に腫瘤が出現した．疼痛を伴い座れなくなったため，近医より当科を紹介された．肛門周囲に手拳大の乳頭腫状の灰色角化性腫瘤を認めた．組織学的に，乳頭腫状の表皮過形成，角層の肥厚がみられ，顆粒層表皮細胞の空胞化を認めた．核異型や異常な分裂像はなかった．polymerase chain reaction (PCR)およびloop-mediated isothermal amplification (LAMP)でhuman papillomavirus(HPV)-11型を検出した．腰椎麻酔下に腫瘍切除の方針であったが，術前検査でHCV抗体陽性であることが判明した．肝炎に対するインターフェロン(IFN)療法により腫瘍縮小効果を期待できると考え，IFN-α-2b筋注(6×10^6 IU/日，週3回)を開始した．投与3か月後には腫瘤は著明に扁平化し，5か月後に色素沈着主体となった．

キーワード　尖圭コンジローマ，human papillomavirus (HPV)，インターフェロン(IFN)，loop-mediated isothermal amplification (LAMP)

萩原正則，他：臨皮61：201-204，2007

はじめに

疣贅に対してはさまざまな治療があるが，難渋する例や再発する例も少なくない．インターフェロン(IFN)は種々のウイルスに対して抗ウイルス作用を示すサイトカインであり，疣贅にも有効とされる[1]．今回われわれは，IFN-α-2b筋注療法が奏効した肛囲巨大尖圭コンジローマの1例を経験したので，報告する．

●●●

症　例

患　者：64歳，ヘテロセクシャルの男性

初　診：2005年6月24日

主　訴：肛囲腫瘤

家族歴：特記すべきことなし．

既往歴：10年前に右下腿骨髄炎手術

現病歴：半年前より肛門周囲の腫瘤に気づいた．徐々に増大し，疼痛を伴い座れなくなったため，近医を経て，手術目的で当科を紹介された．

初診時現症：肛門周囲に悪臭を伴う手拳大の表面顆粒状，乳頭腫状の灰色角化性腫瘤を認めた．肛門・直腸内には病変はみられなかった(図1a)．

初診時検査所見：WBC 5,700/μl(Neut

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* Systemic interferon therapy for condyloma acuminatum

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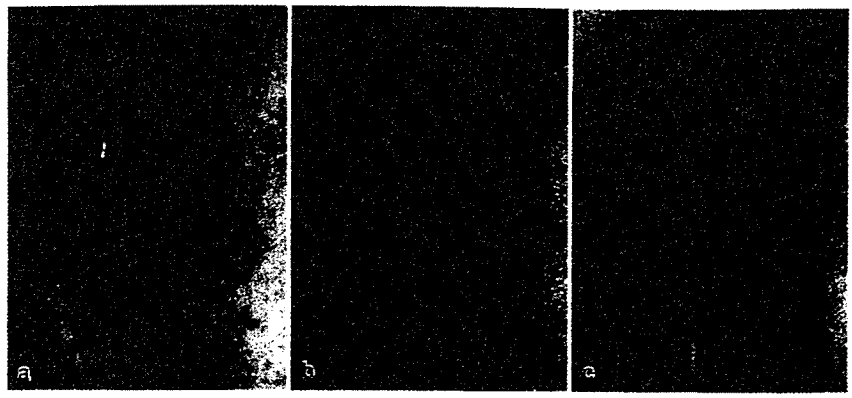

図1 臨床像
a：初診時，b：IFN 投与6週後，c：IFN 投与3か月後

図2 病理組織学的所見

63.3%，Lymph 30.1%，Eos 0.0%)，Hb 16.1 g/dl，Plt 15.3×10⁴/μl，AST 47 IU/l，ALT 80 IU/l，LDH 205 IU/l，ALP 325 IU/l，γ-GTP 30 IU/l，BUN 35 mg/dl，Cr 0.6 mg/dl，CRP 0.2 mg/dl，TC 201 mg/dl，TG 67 mg/dl，Glu 120 mg/dl，HbA_{1c} 5.3%，CD3 76.7%，CD4 47.3%，CD8 34.8%，CD4/8 1.36，HBs 抗原陰性，HCV 抗体陽性，STS 陰性，TPHA 陰性，HIV-1/2 抗体陰性．

病理組織学的所見：乳頭腫状の表皮過形成，角層の肥厚がみられ，顆粒層表皮細胞の空胞化を認めた．核異型や異常な分裂像はなかった(図2)．

ウイルス学的検査：Yoshikawa ら[2]による L1 領域のプライマーを使用した polymerase chain reaction(PCR)で human papillomavirus (HPV)-11型を検出した．また，独自に設計した E6/7領域プライマーによる loop-mediated isothermal amplification (LAMP)で，同様 HPV-11を37分6秒で検出した．さらに Tucker ら[3]による E6/7領域のプライマーによる real-time PCR で HPV-11を 5.86×10^6 copy/tube 検出した．

診断，治療および経過：以上より，HPV-11型陽性の尖圭コンジローマと診断した．腰椎麻酔下で切除および炭酸ガスレーザーによる蒸散術を予定し術前検査を施行したところ，HCV 抗体陽性であることが判明した．そこでC型肝炎に対し IFN 療法の適応があれば，それにより腫瘍縮小効果を期待できると考え，C型肝炎に対する精査を進めた．HCV serogroup：2，HCV RNA 定量：13 Meq/ml であり，IFN 適応基準を満たしたため，IFN-α-2b 6×10^6 IU 週3回筋注を開始した．徐々に腫瘍の縮小がみられ，投与6週後には扁平化し(図1b)，投与3か月後(総投与量 216×10^6 IU)には，ほぼ平坦化した(図1c)．この時点で炭酸ガスレーザーによる蒸散術を考慮したが，患者は外科的治療をかたくなに拒んだ．IFN 筋注を継続し，計5か月間(総投与量 540×10^6 IU)投与し，終了とした．その時点で腫瘍は色素沈着主体となっていた．残存病変の検討，再発の可能性について説明し，再度外科的処置を勧めたが，患者の同意は得られなかった．肝炎に関

表1　尖圭コンジローマに対するIFN治療(文献10より一部改変して引用)

	種類	投与方法	治癒率
局所治療	IFN-α	1～2 MIU/g 3回/日，または週3回4～16週外用	3か月以上33%，終了時6～90%有効，再発率6%
	IFN-α-2b	1～3 MIU局注	3か月以上36～62%，終了時19～62%有効，再発率0～33%
	recombinant IFN-α	1 MIU，0.1 MIU溶液0.1 ml/各疣贅週3回局注	1 MIU群53%，0.1 MIU群19%，プラセボ群13%
	recombinant IFN-β-1a	週3回局注	3か月後50～73.3%
	IFN-γ	3 MIU局注6週間	18.5%
全身治療	IFN-α-2a，2b，2c	1～4 MIU週1～3回皮下または筋注	3か月以上18～21%，終了時7～51%有効，再発率0～23%
	IFN-β	2 MIU筋注10日間連日	8週後51%，1年後100%治癒

MIU：$\times 10^6$ IU

表2　IFNの有効性を決定する因子と自験例の特徴

因　子	responder	nonresponder	自験例
細胞性免疫	活性化CD4↑(IL-2，IFN-γ，TH1細胞)，CD16↑(NK細胞)	CD4↓，S-100蛋白↑(Langerhans細胞)，MHCクラスII↓，不適合MHCクラスI↑，IL-1a，IL-2b，G-CSF，TNF-α ↓	CD4>CD8
表皮分化	K6，16軽度↑，K5，10，14→(表皮性角化保持)	K6，8，13，16↑，K5，10，14↓(粘膜・胎児皮膚パターン)，PCNA，cyclin A，cdc2 kinase↑，TGF-β1，TGF-β2，p53↓	K16軽度(+) K10，14(+) PCNA(−) p53(−)
HPV転写活性	L1遺伝子↑	E7遺伝子↑	ND
ウイルス量	有意差なし		5.86×10^6 copy/tube
ゲノタイプ	?		HPV-11

ND：未施行

しては重大な副作用もなく，肝炎ウイルスの陰転化がみられた．

●●●

考　按

IFNは1954年Naganoら[4]により発見され，1957年Isaacsら[5]によって命名された種々のウイルスに抗ウイルス作用を示すサイトカインである．抗ウイルス効果を期待して使用されるのはIFN-αとβである．臨床で使用されているIFN-αとしては，天然型IFN-αと遺伝子組み換えIFN-α-2aとIFN-α-2b，さらに従来のIFN-α製剤より高い抗ウイルス効果をもつconsensus IFN-αがある．それぞれサブタイプ間で薬物動態に差がみられることが知られている[6]．IFNはウイルス性疣贅に対しては保険の適用がないが，約30年以上前から試みられている[7,8]．

疣贅に対するIFNの作用機序には，2′-5′オリゴアデニル酸合成酵素系，プロテインキナーゼ系，およびJAK-STAT経路シグナル伝達を介した抗ウイルス作用以外に，細胞増殖抑制作用，マクロファージ活性化作用，NK細胞活性化作用，好中球活性化作用，およびMHCクラスIとII抗原の発現増強による抗腫瘍効果が挙げられる[9]．

尖圭コンジローマに対する過去のIFN治療報告を表1に示した．液体窒素療法，5-FU軟膏外用，ポドフィリン外用療法または炭酸ガスレーザーなどと併用すると治癒率が上昇するとされる(93.9～98.3%)．

IFNの有効性を決定する因子として，Aranyらは細胞性免疫，表皮分化度，HPV転写活性，ウイルス量を挙げた[11～15]．自験例ではCD4優位のリンパ球浸潤と表皮性角化が保持され，IFN responderと一致する結果であった(表2)．

[redacted]に対しては保険適用で[redacted]療に抵抗する場合，試みられる[redacted]の1つと考えられる．しかし，IFN[redacted]では治癒率は完全でなく，外科的治療などと組み合わせる必要がある．IFNの有効性は個体の免疫応答に頼るところが多いことから，さらなる症例の蓄積とともに，ウイルス学的，免疫学的検討が望まれる．

本論文の要旨は第105回日本皮膚科学会総会にて報告した．

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書評

編集：日本フットケア学会

フットケア―基礎的知識から専門的技術まで

書評者：吉原広和(埼玉県立がんセンター・理学療法士)

「人間の生活において『歩く』ことは単なる日常生活動作の範疇ではなく，より高度な文化的活動の維持・向上に不可欠な身体活動である」．このように考えると，歩行を支える足機能の維持・ケアはないがしろにはできず，足病変のアプローチがいかに人の営みに影響を与えるかが窺える．

フットケアの分野は特に欧米において進歩・発展してきた診療分野ではあるが，日本ではやっと取り組みが始まった段階でしかない．欧米とは違った文化をもつわが国では，「フットケア」技術の発展にも生活習慣の違いが影を落とす状況にあったことは否めないが，今後，足病変に対する集学的治療分野としての「フットケア」が日本でも確立されることを望む医療者は多いのではないだろうか．

足の異常を招く多くの病因は，閉塞性動脈硬化症(ASO)，糖尿病性末梢神経炎，下肢静脈血栓症，リンパ浮腫，がん，リウマチ，皮膚疾患，スポーツ障害，加齢変化など多岐にわたる．近い将来，血管外科・整形外科・内科・皮膚科・形成外科など各専門医や，看護師・理学療法士・義肢装具士・介護福祉士などといった多くの職種が連携し，専門的な足病変のケア・治療が当然のように行われる時代が訪れるに違いない．

日本フットケア学会は2003年に発足した足病変に関する多職種による専門学会である．本書は本学会が編集したわが国唯一の体系的な「フットケア教科書」である．内容も各病変における基礎知識から専門的なケア・治療技術が学べる構成となっている．足病変のケアに悩む医療者には，必携の書籍といえよう．日本フットケア学会の意気込みが感じられる1冊である．

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