Sexually transmitted organisms in sexually abused children

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Abstract

Objective—To establish the prevalence of sexually transmitted organisms and other genital organisms in potentially sexually abused children.

Design—Prospective study of children attending an inner London department of community paediatrics for evaluation of possible sexual abuse.

Subjects—Children under 16 referred for evaluation of possible sexual abuse.

Outcome measures—Prevalence of sexually transmitted organisms in relation to age, symptoms, and type of abuse.

Results—Swabs were taken from 159 of 242 girls evaluated. The overall prevalence of sexually transmitted organisms was 3.7%: three girls were infected with gonorrhoea, four with *Trichomonas vaginalis*, and two with *Chlamydia trachomatis*. One girl had all three infections plus mycoplasmas. Mycoplasmas were identified in 22% of girls swabbed. Of 30 boys swabbed, none yielded a sexually transmitted organism.

Conclusions—There is a low prevalence of definitely sexually transmitted organisms in children who might have been abused. Other organisms possibly associated with sexual activity can be identified in this population. Screening for infection should be mandatory in presumed sexually abused girls with vaginal discharge and ideally should be undertaken in all children attending for evaluation of sexual abuse.

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investigators have used control groups that did not exclude girls with a history of abuse^{4 12}; one study screened only for current sexual activity⁵; other studies had no control groups^{6 7}; and in one study, three controls were reallocated to the abused group.¹³ In adults, some organisms have been shown to be associated with sexual activity, including mycoplasmas and organisms associated with bacterial vaginosis.¹⁰ However, the presence of mycoplasmas cannot be deemed to be diagnostic of sexual abuse because these organisms can be transmitted vertically and have been found in non-sexually active girls.¹⁰

There are inherent difficulties in interpreting studies identifying sexually transmitted organisms because it is difficult to eliminate child sexual abuse. It is not usually possible to obtain all necessary swabs from all children. This prospective study was undertaken to screen abused children for infection to determine the prevalence of sexually transmitted organisms in association with type of abuse and physical findings.

Subjects, methods, and results

Three hundred and nineteen children (77 boys, 242 girls) between the ages of 9 months and 16 years, attending an inner London paediatric department for evaluation of sexual abuse entered the study from July 1991 to July 1994. The diagnosis of child sexual abuse was based on the following: disclosure by the child; outcome of police and social services investigation; care and/or criminal proceedings; and the presence of physical findings supportive of abuse, such as hymenal tears. Swabs were taken of vaginal discharge (if present) or from the vaginal introitus, for Gram stain and culture for *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis*, *Candida* spp, mycoplasmas, and other bacterial infections using standard methods.¹⁴ Bacterial vaginosis was diagnosed on two criteria, clinically abnormal vaginal discharge and clue cells on Gram stain. As prepubertal children have alkaline secretions, pH is invalid in this population as a diagnostic criterion for bacterial vaginosis. Anal swabs were taken from boys and girls reporting anal abuse, or with anal findings suggestive of abuse, for culture for *N gonorrhoeae* and *C trachomatis*. Urethral swabs were sent for isolation of *N gonorrhoeae* and *C trachomatis*. Blood tests for human immunodeficiency virus (HIV) and treponemal antibodies were performed at the request of parents or child in cases involving multiple abusers or when the perpetrator was known to be HIV positive. Genital warts were diagnosed clinically.

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Few prospective studies have been undertaken to document the epidemiology of sexually transmitted organisms in sexually abused children. The reported prevalences range between 0% and 13%.¹⁻⁹ However, the risk of infection depends on the prevalence of sexually transmitted infection in the abusing population, the type of assault, the organism, and the site of assault. Non-abused children can acquire sexually transmitted organisms by vertical transmission or, rarely, by non-sexual contact such as from fomites or non-sexual acts.^{2-8 10} How often this occurs is controversial. Our current understanding of normal vaginal flora in childhood is limited. Some studies have compared the flora in girls with vulvovaginitis with those of a control group without addressing the possibility of sexual abuse.^{3 11} Other

Table 1 Organisms identified in girls swabbed (number swabbed)

Organisms	Age (years)			Total (n = 242)
	< 3 (n = 42)	3–10 (n = 117)	> 10 (n = 83)	
<i>Neisseria gonorrhoeae</i>	2(15)	0(90)	1(54)	3(159)
<i>Chlamydia trachomatis</i>	0(10)	1(67)	1(54)	2(131)
<i>Trichomonas vaginalis</i>	0(15)	0(90)	4(54)	4(159)
Mycoplasmas	0(8)	6(42)	15(46)	21(96)
<i>Candida albicans</i>	4(15)	3(90)	12(54)	19(159)
Bacterial vaginosis	0(15)	1(90)	2(54)	3(159)
Anaerobes	0(15)	6(90)	1(54)	7(159)
Swabs unavailable	27	27	29	83

Swabs could not be taken from all sites in all children. Swabs were not taken from 83 girls and 47 boys: 49 children refused; 10 samples were toxic to culture; in the remainder there were no physical findings and either no evidence of sexual abuse that involved touching or penetration, or a delay of more than a year to presentation from time of abuse. Vaginal swabs were taken from 159 girls, and anal swabs from 63 children (28 boys and 35 girls); two boys had both urethral and anal swabs and two adolescent boys had only urethral swabs taken. Two throat swabs were taken from girls giving a history of oral sex.

Fifteen boys were aged under 3 years, 42 were between 3 and 10 years, and 20 were over 10 years of age. No sexually transmitted organisms were detected in the 28 boys who had anal swabs taken or in the four boys who had urethral swabs taken. Six of these 28 boys were aged under 3 years, three of whom were infected with *C. albicans*; 15 were between 3 and 10 years and seven were aged 10 years and older and they had no infections. Two boys were identified as abusers and had also been abused.

The infections identified according to the different age categories of girls are presented in table 1. Three girls (aged 11 months, 2½ years, and 13 years), all with vaginal discharge, were found to have gonorrhoea. Sexual contact was disclosed by the two oldest girls. Neither parent of the 11 month old girl had evidence of gonorrhoea and a neonatal infection screen, including eye swabs, was negative making vertical transmission unlikely. Two of 131 children screened for *C. trachomatis* were positive, one by direct immunofluorescence only. Both had evidence of penetrative abuse and one had vaginal discharge. *T. vaginalis* was found in four girls, all of whom were Afro-Caribbean, with oestrogenised hymena and vaginal discharge. One had anogenital warts. All had evidence of penetrative abuse (three hymenal tears, one enlarged hymenal opening, one previous termination of pregnancy).

Nineteen girls had candidal infection diagnosed on culture. Six of the younger children had a typical candidal nappy rash without laboratory confirmation. Mycoplasmas were identified in 21 (22%) of the 96 girls for whom swabs were available (14 *Ureaplasma urealyticum*, four *Mycoplasma hominis*, three dual infection). Three girls were prepubertal and 15 had evidence of penetrative abuse. One girl disclosed digital abuse but her father admitted penile penetration.

A heavy growth of anaerobes was found in seven children. Five of the girls disclosed abuse involving touching of the genital area, one disclosed fellatio, and one child did not describe the type of abuse. Bacterial vaginosis was diagnosed in three girls, one of whom disclosed licking, one penetrative sex, and one unknown. *Mobiluncus* spp were identified on Gram stain of vaginal discharge in a 6 year old girl who alleged touching. Of these 11 girls, six had discharge, four had erythema alone, and one was asymptomatic. A girl aged 11 years and a boy aged 9 years had anogenital warts. None of six children tested serologically for syphilis and HIV were positive.

Other organisms identified included staphylococci, streptococci, *Haemophilus influenzae*, and *Escherichia coli* in eight girls aged 3–10 years, all of whom had vulvovaginitis.

Overall, seven of the 159 girls (3.7%) had gonorrhoea, chlamydial infection, or trichomoniasis. One who was gang raped had all three infections plus mycoplasmas.

Comments

Our prevalence of 3.7% is similar to another British study.¹ All the girls with gonorrhoea or trichomoniasis and two of three with chlamydial infection had vaginal discharge. The largest prospective study found 90% of girls with gonorrhoea and 33% of girls with *C. trachomatis* had vaginal discharge.²

These results support mandatory screening for *N. gonorrhoeae*, *C. trachomatis*, and *T. vaginalis* when there is a history of abuse and presence of vaginal discharge. Ideally, screening for these organisms should be included in any child sexual abuse investigation.

Mycoplasmas were present in 22% of girls swabbed in our study. All had either a history of or physical signs suggestive of penetrative sex. The identification of mycoplasmas cannot be deemed to be diagnostic of sexual abuse because they can be transmitted vertically and have been found in non-sexually active girls. Two reported studies comparing controls with sexually abused girls give conflicting conclusions on the significance of mycoplasmas in sexually abused children.^{15 16} Further controlled studies are needed to assess the significance of mycoplasmas. Similarly, the significance of a heavy growth of anaerobes and organisms associated with bacterial vaginosis⁹ needs evaluation in relation to abuse. Finding suitable control groups for such studies poses ethical and practical difficulties, particularly in relation to consent, and matching for previous antibiotic use and age. Identification of organisms (*N. gonorrhoeae*, *C. trachomatis*) using DNA amplification technology has been reported in prepubescent children using vaginal washings.¹⁷ Samples obtained non-invasively, such as urine, might be advantageous for screening abused children and might increase our understanding of genital infections in children.

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