



## Childhood gonorrhoea in Auckland

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### Abstract

**Aim** To review the Auckland experience of childhood gonorrhoea, with particular regard to inter-agency management and medicolegal outcome.

**Methods** Retrospective review of medical records at a specialist child abuse assessment unit, and follow up with other agencies involved.

**Results** Twelve cases of genital gonorrhoea in pre-pubertal children in five years, in contrast to two cases in the preceding six years. Major problems in inter-agency coordination, and an inability to identify the source of the infection in most cases.

**Conclusions** Gonorrhoea in the pre-pubertal child is an increasing problem, and is often poorly handled. Proposals for an inter-agency guideline are discussed.

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Gonorrhoea in adults in New Zealand has been increasing in prevalence since 1996, mainly in adolescents and young adults. The data comes from laboratory surveillance, or from studies in populations presenting to sexual health services.<sup>1</sup> No attention has been given to the effect of this trend on pre-pubertal children.

Whakaruruhau was established in 1991, and provides a 24-hour service, seven days a week for all forms of abuse and neglect in children and young people (aged 0 to 17 years). We are the sole point of medical referral in metropolitan Auckland (population 1 209 000) for acute sexual abuse in pre-pubertal children. We have observed an increasing number of cases of gonorrhoea in children. The purpose of this article is to review those cases, with particular regard to the factors influencing outcome.

### Methods

We follow careful forensic procedure for screening for sexually transmitted infections (STI). If there is discharge, swabs are Gram's stained at the bedside. If STI is suspected, "four-site screening" (vagina, urethra, rectum and throat) is usually performed. Swabs are plated onto selective media at the bedside, and transported to the regional STI laboratory within one to two hours, recording a strict chain of evidence. Only a positive culture confirmed by the regional laboratory is accepted as diagnostic. We regard a positive culture for gonorrhoea outside the neonatal period as diagnostic of sexual abuse, and notify the statutory authorities at once.

All pre-pubertal children seen at Whakaruruhau with gonorrhoea were identified, both from a research database covering the period from 1991 to 1998, and by prospective identification from 1996. These figures were checked against data held by the STI laboratory. The medical records of all these children were reviewed. Information as to outcome was gathered by enquiry from the Department of Child, Youth and Family Services (CYF), the Police and the Crown Prosecutor.

### Results

From 1991 to 2002, we have seen 14 cases of genital gonorrhoea in pre-pubertal children. Two of these cases occurred in 1993, and both came from the same household. Twelve of these cases have occurred since 1997. A further four isolates from children aged between two and seven years were reported from private

laboratories to the Auckland Regional Laboratory in 1996 and 1997. These children were not referred to Whakaruruhau, and the circumstances in which the cultures were taken are unknown.

In 13 of the 14 cases seen in Whakaruruhau, the child had not been taken to the doctor for suspected sexual abuse. In these 13 cases, the child presented to a general practitioner with genital symptoms, and the diagnosis of gonorrhoea was made unexpectedly on a routine swab placed in standard transport medium. The other child was the stepsister of an index case. She had a negative swab at Starship during screening of household contacts, and a positive swab later after she disclosed ongoing abuse. Eleven of the 14 cases were reported to have had no behaviour changes prior to the diagnosis of gonorrhoea. (One had been “withdrawn”, one was having nightmares, and one had a single episode of bedwetting and unexplained tearfulness.)

**Table 1. Symptoms, signs and sensitivities**

ID	Ethnicity*	Age	Sex	Year	Symptoms	Signs <sup>†</sup>	Sensitivity <sup>‡</sup>	Other STI	Treatment <sup>§</sup>
1	T/M	5	F	1993	3 weeks PV discharge	A	S		C
2	T	8	F	1993	1 day PV discharge	A,D	S	<i>Chlamydia</i>	A&P,E,C
3	C	6	F	1997	3 days PV discharge, soreness	U,V,D	MR		A&P,E,C
4	T/E	3	F	1997	1 day PV discharge and soreness	U,V,D	S		C,E
5	M	5	F	1998	3 days abdo pain, 1 day PV discharge	D	S	<i>Chlamydia</i>	A&P E
6	T	3	F	1999	2 days PV discharge	V,D	S		A&P,E
7	CI	5	F	1999	PV discharge (? days)	V,D	S		A&P
8	M	3	F	1999	1 day dysuria and PV discharge	V,D	S		C,E
9	S	6	M	1999	1 day dysuria and urethral discharge	U,D	S		Ci,Rox
10	M	3	F	1999	Underwear stained “for weeks”	U,V,D	S	<i>Chlamydia</i>	Ci,Azi
11	C	6	F	2000	7 days PV discharge	D	MR		C
12	CI	7	F	2001	2 days PV discharge	V,D	R		C,Azi
13	E	3	F	2002	5 days PV discharge	V,D	S		C
14	T	4	F	2002	1 day PV discharge	V,D	S		C

\*C=Chinese; CI=Cook Island Maori; E=European; M=Maori; S=Samoan; T=Tongan.

<sup>†</sup>A=abnormal hymen (complete transection between 3 and 9 o’clock); D=discharge; U=urethritis; V=vulvovaginitis.

<sup>‡</sup>S=fully sensitive; R=resistant to penicillin; MR=multi-resistant to penicillin, tetracyclines and ciprofloxacin.

<sup>§</sup>C=Ceftriaxone; A&P=Amoxil & Probenecid; E=erythromycin; Ci=ciprofloxacin; Rox=roxithromycin; Azi=azithromycin

Table 1 lists the presenting symptoms, the examination findings, the results of STI screening, and the medical outcome. Notable findings are: all children had symptoms;

12 of 14 had no examination findings diagnostic of sexual abuse except for the presence of an STI; 11 of 14 isolates were fully sensitive to penicillin; and three children also had *Chlamydia* (all of whom required subsequent re-treatment).

Table 2 describes the outcome of attempts to provide STI screening for potential sources of the child's infection. Notable findings are the long delays in screening potential contacts, and the paucity of positive results.

**Table 2. Contact tracing**

Case	Identified for screening	Screening complete	Time (days)	Screen + (Gonococcus)	Screen + (other STI)
1	Household: 6 children and 4 adults.	Unknown	14–50	Baby (eye)	No
2	Sister of Case 1. Screen negative, disclosed later and became symptomatic. Repeat culture was positive.	Unknown			No
3	Parents, grandparents, 2 siblings, uncle, 3-year-old male cousin.	Yes	0–90	Mother	No
4	Parents. 5 month sister not screened.	No	3	No	No
5	Household: grandmother, mother, 3 sisters aged 2–14, 21-year-old uncle. 17 year sister refused. Other: father, uncle.	No	?	No	Mother <i>Chlamydia</i>
6	Household: parents, new baby, sisters (8 and 11), brother (5), uncles (20 and 26), aunt, grandmother, female cousin. Only siblings and adult males were screened.	No	0–21	No	No
7	Came to NZ in a group of 65. Group returned, but mother, aunt and 5 children were staying with family until the discharge developed. All 5 children, and 5 adults in the house screened.	No	3–90	No	No
8	Household: aunt, 2 uncles and 3 children. Did not screen aunt. Frequent visitors: mother, stepfather, 3 siblings.	No	1–180	Uncle (18)	Unknown
9	Residents in house: mother, 19-year-old uncle, 2-year-old brother. No contact with biological father.	Yes	0–2	No	Uncle <i>Chlamydia</i>
10	Residents in house: mother, brothers (18, 12, 10). Also 4 cousins (aged 1–14 years) with whom they stay occasionally, and some extended family in a rural town.	Yes	3–150	No	No
11	Family fled the country immediately.	No			
12	Residents in home: father, mother, baby sister, paternal grandparents, 15-year-old uncle, 11 year old cousin.	No	2–7	Uncle and cousin	No
13	Residents in the two households of the father and mother and visiting sexual partners, and grandparents. 14 in all.	Yes	1–5	Father	No
14	Parents, sister (7), household of parental grandparents and 7 preschool teachers. 14 adults and 3 children in total.	Yes	0–33	No	No

**Table 3. Statutory outcomes**

Case	Interview *	Days till interview	Disclosure	Perpetrator	CYPF Act Process	Prosecution	CYF Outcomes
1	EVU	35	No	Father	Unknown	Yes	Closed file (7/12)
2	EVU	112	Yes – delayed	Father	Unknown	Yes	Closed file (7/12)
3	SSU	42	No <sup>†</sup>		FGC <sup>‡</sup>	No	Family left country
4	SSU	60	No		Informal	No	Family left country
5	DI, SSU, EVU	5	Yes – delayed	Mother	FGC <sup>‡</sup>	Too young to testify	Grandmother took custody. File closed.
6	DI, SSU	56	Yes – to EVU reception	Uncle	Informal	Convicted, acquitted at retrial	Closed file (15/12)
7	DI, SSU, EVU	450	No <sup>†</sup>	Cousin (16) disclosed to SW	Informal	No	Closed file (7/12)
8	DI only	1	No <sup>§</sup>		Informal	No	File still open
9	EVU	4	Yes – delayed <sup>††</sup>	Uncle	Informal	Acquittal	Uncle deported, file closed
10	EVU, SSU	7	No <sup>¶</sup>	? 14-year-old	Informal	No	File still open
11	Nil	N/a	N/a	? Father	Informal	No	Family fled country
12	EVU	2	Yes	Uncle and cousin	Informal	Conviction	Closed file
13	Nil	N/a	No	? Father	Informal	Pending	File still open
14	DI	15	No	Unknown	Informal	No	File still open

\*EVU=Evidential Video Unit; SSU=Specialist Services Unit (psychologists within CYF),

DI="Diagnostic Interview" (conducted as a screening test by a front-line social worker)

<sup>†</sup>No interpreter available acutely

<sup>‡</sup>Family Group Conference under the Children, Young Persons and Their Families Act 1989

<sup>§</sup>Said "man" and then "clammed up". Referred on to Specialist Services but never seen there

<sup>†</sup> Disclosed to mother after EVU, repeated disclosure when formal EVU repeated later

<sup>¶</sup>Burst into tears when mother excluded from room following standard procedure. Six months later seen in SSU and made partial disclosure ("monster")

Table 3 describes the inter-agency process: the outcome of interviews of the child, the duration of the medicolegal process, and the outcome of that process to date. Notable findings are: the difficulty in getting rapid and effective inter-agency communication; the delays in interviewing the child and in providing therapy for the child; the low rate of disclosure by the child; the difficulty in identifying the source of the infection; and the scarcity of prosecution.

## Discussion

Adult infection with *Neisseria gonorrhoeae* is sexually transmitted, with an incubation period of 1 to 14 days.<sup>2</sup> The organism is a Gram-negative diplococcus. It is fastidious, such that the standard practice in sexual health clinics is to direct plate swabs onto selective media at the bedside.<sup>3</sup>

The issue of genital gonorrhoea in children is complicated by persistent questions as to the means of its transmission. It is well accepted that neonatal infection can occur by vertical transmission, with symptoms appearing within days of birth.<sup>4</sup> Outside the neonatal period, outbreaks of gonococcal conjunctivitis in children have been ascribed to non-venereal transmission in overcrowded and deprived households.<sup>5</sup>

It has also been suggested that non-venereal transmission of genital gonorrhoea may be possible in a child. Those who support this possibility point to the survival of the organism on towels and toilet seats, the physiological susceptibility of the pre-pubertal vagina, and case studies in which this mechanism has been invoked.<sup>6</sup> Those who reject it point to the limitations of the evidence for fomite transfer, the limited assessment for sexual abuse in the case studies cited, and the phenomena of non disclosure and delayed disclosure.<sup>7-10</sup> It would be fair to say that the consensus in the Western literature is that genital gonorrhoea in a child, out of the neonatal period, is a sexually transmitted disease.<sup>11</sup>

Sexual abuse of children is prevalent in our community. Conservative New Zealand estimates based on credible research suggest that 17% of females and 4% of males will have experienced sexual abuse by the age of 16, and for 6% of females this includes penile penetration.<sup>12</sup> It is reasonable to assume that the incidence of gonorrhoea will be mirrored in the population of sexual offenders, and therefore in their victims. However, there is no comprehensive surveillance system for sexually transmitted infections in NZ. Our only means of assessing the paediatric incidence is by case report. What evidence we have, suggests that this problem is not limited to Auckland. At least three other cases of gonorrhoea in children have presented around New Zealand recently (personal communications: Dr Jenny Corban, Hastings, July 2000; Dr Dawn Elder, Wellington, November 2001; Dr Jan Widdowson, Whangarei, November 2001).

It is a worrying fact that none of our cases presented because a child made a disclosure, or because a caregiver was concerned about sexual abuse. In every case, the child was diagnosed after they presented to a GP with vulvovaginitis, and a swab came back unexpectedly positive. (The situation is made more worrying by the fact that for every gonococcal sample that survives a trip to a laboratory in transport medium, another may not). We are not alone in seeing this mode of presentation. Recently, 9% of pre-pubertal girls presenting to routine paediatric care for vaginal discharge in Cincinnati, Ohio, were found to have gonorrhoea.<sup>13</sup> In contrast, Australian research showed a low incidence of gonorrhoea in such circumstances.<sup>14</sup> However, vulvovaginitis is common in children.<sup>15</sup> Without local data on community prevalence, it would be difficult to justify routine screening using direct bedside plating on all children with vaginal discharge in New Zealand.

However, if a swab comes back positive, the only responsible approach to genital gonorrhoea in a child is to manage it as an acute presentation of child sexual abuse.

There are a number of key aspects to management, which require the collaboration of an expert examiner and an expert laboratory. The child must be examined by someone who is trained in the medical examination of child sexual abuse.<sup>16</sup> (In New Zealand, such training is available through Doctors for Sexual Abuse Care, DSAC.) The diagnosis must be confirmed. *N. gonorrhoeae* can be confused with related organisms (non gonococcal *Neisseria* spp., *Kingella denitrificans*, *Branhamella catarrhalis*) on Gram's stain or culture.<sup>17</sup> The culture must be taken under "chain of evidence", ensuring that its origin cannot be challenged in subsequent legal proceedings. Thorough assessment for other STIs is indicated. If gonorrhoea is confirmed, the appropriate treatment is parenteral Ceftriaxone. Given the frequent concurrence of *Chlamydia*, treatment for this should also be given.<sup>18</sup>

It is important also to consider the situation of other children at risk. Most children with gonorrhoea are symptomatic.<sup>19</sup> In low-risk populations therefore, screening asymptomatic children is unnecessary.<sup>20</sup> However, screening is indicated for asymptomatic siblings of an index case, where the risk of infection is higher.<sup>21</sup>

The first priority is to secure the safety of the child. Therefore, the steps described above to confirm the diagnosis must be taken quickly. Whilst immediate treatment of physical symptoms is important, there is little point in treatment of the symptom if the child is to be exposed again to the cause. Identifying the source of the infection is the key both to ensuring the child's safety and to minimizing the trauma of the investigation to the child and the extended family.

There are several ways to identify the perpetrator. These include a clear disclosure by the child, confession by the perpetrator, or observation of the abuse by a third party. The latter two are rare, for obvious reasons. Disclosure by the child is also uncommon, as in our series. One reason for this is, of course, the age and verbal abilities of the child. Successful prosecution of sexual abuse in the pre-school child is rare.<sup>22</sup> Other reasons are set out in classic papers.<sup>23,24</sup> As our series demonstrates, the presence or absence of behavioural changes in the child is unhelpful.<sup>25</sup> In most cases, we are left to make deductions based on who was in contact with the child during the incubation period of the infection, and other risk factors. These deductions may suffice to ensure that the child is placed in a safe household, but are often insufficient to proceed with a prosecution.

As our series shows, screening the child's contacts is a particularly difficult issue. First, for it to be of any value, it needs to take place quickly. As soon as the diagnosis is made, the perpetrator could seek medical treatment and be free of infection within 48 hours. The prevalence of penicillin resistance in *Neisseria gonorrhoeae* in New Zealand in 2001 was 6.4%, and quinolone resistance was 9.7%.<sup>1</sup> A course of antibiotics on the pretext of a throat infection will still give a significant chance of cure. Second, it needs to include all the potential sexual contacts of the child. Unfortunately, no screening criteria have been defined for this situation, as a person with quite limited contact with the child may be the perpetrator. It is certainly unwise to assume that female caregivers, the elderly, child or adolescent peers<sup>26</sup> or babies do not need to be screened. Third, gonorrhoea is increasingly prevalent in the community. The mere fact that an individual in the household has gonorrhoea, does not prove that he or she is the perpetrator. Fourth, there is the issue of who decides who should be screened, and who takes responsibility for organising and paying for the screening. There are major practical difficulties in organising screening of what

may be a large number of people of different ages. Interpreters may be required, and a specialist sexual health service should be involved. In our most recent cases, we have successfully used urine PCR for screening. However, false positives can occur with urine PCR for gonorrhoea. Confirmatory cultures would have to be performed on any positive urine screen before the result could be used in court.<sup>11</sup> Lastly, there is no provision in law for compulsory screening in this situation. There are, therefore, complex ethical issues related to informed consent by those who agree to be screened, particularly regarding communication of the results to the doctor examining the children and to the statutory authorities.

The outcome of our screening is disappointing, when one considers studies more than 20 years old in which positive cultures were obtained in 27 to 50% of those screened.<sup>27</sup> Other studies, using a careful multidisciplinary approach, have obtained even higher rates of identification of the source of the child's infection.<sup>28</sup>

For these reasons, the diagnosis of gonorrhoea in a child should be treated with the same urgency as the child who turns up at school with inflicted bruises, or the child who makes a clear disclosure of sexual abuse by a caregiver residing in the home.

In 1996, we began to develop an inter-agency guideline in cooperation with the Police and CYF. There has been little interest in this at a national level. However, the essentials of this are as follows: the safety of the child should be addressed on the day that the diagnosis is made (this may require interim measures while the diagnosis is confirmed); screening of all potential contacts should take place within 48 hours; and the child should proceed to diagnostic interview as soon as safety is assured. Even if the diagnostic interview does not lead to a disclosure, the child should proceed to an evidential interview as soon as possible. The approach taken in the evidential interview must take into account the fact that gonorrhoea is hard presumptive evidence of sexual abuse. The above recommendations are extraordinarily difficult to achieve. The paediatrician or DSAC doctor, the local Police and CYF social workers and sexual health staff need to be committed to the programme. In our experience, this demands a collaborative case conference within 24 hours of the diagnosis being made.

In many ways, the diagnosis of paediatric gonorrhoea is a case study of the difficulties inherent in making a diagnosis of child sexual abuse, the reasons that multidisciplinary practice is vital to a successful outcome, and the challenges that must be overcome if we are to interrupt the cycle of abuse. Effective intervention in child abuse will occur only when health and statutory personnel have established good working relationships, and when sufficient expertise is present on all sides.

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