Medical Findings in Child Sexual Abuse Cases

Barbara L. Knox, M.D.

University of Wisconsin SCHOOL OF MEDICINE AND PUBLIC HEALTH
UWHealth American Family Children's Hospital

Rachel H. Mitchell, J.D.

Maricopa County Attorney's Office
Bill Montgomery, County Attorney

Topics To Be Covered

- **Injuries**
- **DNA**
- **STDs**

Injuries

Prepubertal Hymen

- **Prepubertal:**
  - **Most common morphology: Crescentic**
  - **Thinned and translucent**

Examination Findings In Confirmed Child Sexual Abuse

"IT'S NORMAL TO BE NORMAL."

Study evaluated examination findings in legally confirmed cases of child sexual abuse

- 28% had normal exams
- 49% had nonspecific exams
- 9% had suspicious exams
- 14% had abnormal exams

***Only 1% of patients had abnormal anal findings**

Adams: Pediatrics 94:310, 94

Genital Anatomy in Pregnant Adolescents

- **36 pregnant adolescents examined by child abuse experts**
- **34 had no specific genital findings to indicate prior vaginal penetration**

*****Great article to cite in court!!!!!**

Kellogg et al: Pediatrics 2004

Reasons for Normal Exams

- No vaginal penetration
  - "Intracrural" intercourse is recognized in the medical literature
  - This is still penetration of the vulva
- Injuries heal quickly/delayed disclosure
- Injuries obscured by adolescence
- Adolescent hymen stretches

Not all doctors are equal – not even pediatricians

- One can tell how many times a female has had sex – vagina becomes "a well-worn trail"
- Purpose of labia: Prevents urine from splashing against toilet
- Victim has no hymen (actually was imperforate)

Victim Issues

- What we know about victims
  - Victims underreport all acts, particularly
    - Oral sex (either way)
    - Anal sex (either way)
    - Level of violence
  - Medical findings more likely if child makes fantastic disclosure

- If child does not disclose act that would result in medical evidence, consider an exam if:
  - Child describes long-term abuse
  - Child discloses minimal behavior but suspect has had ongoing access
  - Other children in home disclose penetration or long-term abuse

Other Considerations

- Juries: It's easier to explain that you looked and found nothing than to explain that you didn't bother looking at all
- Victims: Part of healing to know that they are physically okay

Updated Guidelines for the Medical Assessment and Care of Children who May Have Been Sexually Abused

Adams et al. Journal of Pediatric and Adolescent Gynecology-April 2016

Findings with No Expert Consensus on Interpretation With Respect to Sexual Contact or Trauma

Insufficient or conflicting data from research studies: (May require additional studies/evaluation to determine significance) These physical/laboratory findings may support a clear disclosure but should be interpreted cautiously if the child gives no disclosure

Physical Examination Findings

Lesions with etiology confirmed: (Condyloma and Herpes) Indeterminate specificity for sexual transmission)

Findings Caused by Trauma and/or Sexual Contact

The following findings support a disclosure of Sexual Abuse and are highly suggestive of abuse even in the absence of a disclosure unless a clear, timely, plausible description of accidental injury is provided by child/caretaker

- **Acute trauma to external genital/anal tissues**
- **Residual (healing) injuries**

Injuries indicative of blunt force penetrating trauma (or from abdominal or pelvic compression injury if such history is given, ie: run over by an automobile)

- **Presence of infection confirms mucosal contact with infected and infective bodily secretions, contact most likely to have been sexual in nature.**
- **Diagnostic of sexual contact (pregnancy and sperm)**

Self-Inflicted Injuries

- Usually limited to superficial abrasions or irritation
- Hymenal trauma does not occur in normal children with normal pain sensation
- Masturbatory injuries are not reported

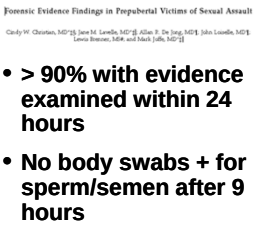
DNA

Looking for DNA

- DNA does not stay in prepubescent girl's vagina as long
  - Different pH
  - Less vaginal secretions
- Don’t forget to swab the suspect

Recent Literature of Yield of Child Sexual Assault Kits

- **273 children <10 y.o.**
- **24.9% had evidence found, only 9% had positive body swabs**
- **64% of all evidence found on clothing/linens**
- **All evidence except one pubic hair was found on clothing or linens after 24 hours**


Forensic Evidence Findings in Prepubertal Victims of Sexual Assault

Cindy W. Christian, MD*‡§, Jane M. Lavelle, MD*‡, Allan F. De Jong, MD¶, John Loiselle, MD¶, Lewis Bronner, MS#, and Mark Jaffe, MD*‡||

- **> 90% with evidence examined within 24 hours**
- **No body swabs + for sperm/semen after 9 hours**

72 Hours - Study

- 80 Total Minors Studied
  - 49 Children: Under 12
  - 31 Adolescents: 12 and up
- All presented within 72 hours of abuse
- Semen found in 16 cases–all were w/i 24 hrs.
  - 13 adolescents
  - 3 children – semen recovered ONLY from clothes/linens
- Forensic Laboratory Evidence in Sexually Abused Children and Adolescents, Young et al, Arch Pediatr Adolesc Med 2006; 585-588.

Recent Literature on Yield of Child Sexual Assault Kits

- **388 sexual assault kits tested**
- **16% with swabs testing positive for DNA**
- **17/20 children<10 examined within 24 hrs of assault were +**
- **3/20 seen >24 hours post assault with + body and clothing swabs**


Forensic Evidence Collection and DNA Identification in Acute Child Sexual Assault

abstract

Recent Literature on Yield of Child Sexual Assault Kits

- **Increased likelihood of evidence being recovered with:**
  - **-Perpetrator ejaculation**
  - **-Genital-genital contact**
  - **-Genital-anal contact**
  - **-Evidence collection before bathing**
  - **-Perpetrator age >18**

Forensic Evidence Collection and DNA Identification in Acute Child Sexual Assault

abstract

Recent Literature on Yield of Child Sexual Assault Kits

- **277 children evaluated**
- **20% with DNA+ swabs who were younger than 14**
- **9% of children < 10 had DNA+ swabs**
- **5 prepubertal children tested + with collection times out as far as 95 hours post abuse**
- **DNA technology improving detection rates**

Collection of Forensic Evidence From Pediatric Victims of Sexual Assault

abstract

STDs

Two Problems

- Suspect has STD/Victim does not
- Victim has STD/Suspect does not

Reasons for Normal Exams

- Transmission rate is nowhere near 100%
- Some STDs (e.g., chlamydia) can be easily and quickly cured
- Incubation period may not have run
- False positive/negative

"Can We Use NAAT's and if so, on What Types of Specimens, to Detect C. trachomatis, N. gonorrhoeae, and T. vaginalis in Children Being Evaluated for Suspected Sexual Abuse?"

Sena, AC. et al. Sexual assault and STIs in Adults and Children. *Clinical Infectious Diseases* 2015;61(S8):S856-64

What Does the Literature Say About NAAT's in 2016 For Prepubertal Children?

- "Although cultures for detection of C. trachomatis and N. gonorrhoeae continue to be recommended if STI testing is performed among CSA patients, the major change in this area is the acceptance of NAATs for identification of these infections primarily from urine samples."

Sena, AC. et al. Sexual assault and STIs in Adults and Children. *Clinical Infectious Diseases* 2015;61(S8):S856-64

What Does the Literature Say About NAAT's in 2016 for Prepubertal Children?

"For extragenital STI testing, there are insufficient data to support use of NAATs in CSA survivors, and concerns have been raised regarding certain NAAT platforms that cross-react and detect nongonococcal Neisseria species and other commensal organisms."

Sena, AC. et al. Sexual assault and STIs in Adults and Children. *Clinical Infectious Diseases* 2015;61(S8):S856-64

What Does the Literature Say About NAAT's in 2016 for Adolescents?

- **NAATs have been recommended for the detection of urogenital infections caused C. trachomatis, and N. gonorrhoeae in adolescents and are FDA approved**
- **NAATs are not FDA approved in adolescents and adults for pharyngeal and rectal sites BUT ARE RECOMMENDED FOR SCREENING**

Sena, AC. et al. Sexual assault and STIs in Adults and Children. *Clinical Infectious Diseases* 2015;61(S8):S856-64

Cross-Reactivity in Neisseria Species

- PCR and SDA have both have cross-reactivity with other Neisseria species
- Cross reactions with non gonococcal Neisseria species occur most frequently with Amplicor (PCR) and to a lesser degree with ProbeTec (SDA) which are DNA amplification tests

Hammerschlag M, Gaydos, C. Guidelines for the use of molecular biological methods to detect sexually transmitted pathogens in cases of suspected sexual abuse. *Methods Mol Biol.* 2012; 903: 307-317.
Papp, J, Schachter, J, Gaydos, C, Van Der Pol, B. Recommendations for the laboratory-based detection of Chlamydia trachomatis and Neisseria gonorrhoeae-2014. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report. 2014; 63(2): 1-19.

Cross-Reactivity in Neisseria Species

- Not a problem for TMA, as it's an RNA amplification test
- Cross reactivity has important diagnostic implications especially when testing extragential sites including the pharynx and rectum.

Hammerschlag M, Gaydos, C. Guidelines for the use of molecular biological methods to detect sexually transmitted pathogens in cases of suspected sexual abuse. *Methods Mol Biol.* 2012; 903: 307-317.
Papp, J, Schachter, J, Gaydos, C, Van Der Pol, B. Recommendations for the laboratory-based detection of Chlamydia trachomatis and Neisseria gonorrhoeae-2014. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report. 2014; 63(2): 1-19.

The Presence of an STI in a Child Beyond the Neonatal Period Suggests Sexual Abuse…

Postnatally acquired gonorrhea, syphilis, and non-transfusion related HIV are usually diagnostic of abuse

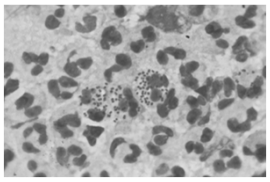
However, Exceptions Do Occur

Hammerschlag M. Sexually transmitted infection testing in children: Sexual assault and abuse of children. *Clinical Infectious Diseases* 2011:53 (Suppl 3) S103-S109.

Centers for Disease Control and Prevention (CDC). Sexually transmitted diseases treatment guidelines 2010. *MMWR Recomm Rep* 2010; 59:1-102.

Neisseria gonorrhoeae

- **N. gonorrhoeae diagnosed in a child beyond 30 days of life is consistent with some type of sexual contact**



Hammerschlag M. Sexually transmitted infection testing in children: Sexual assault and abuse of children. *Clinical Infectious Diseases* 2011:53 (Suppl 3) S103-S109.

The Exceptions…

- **Perinatally acquired rectal or vaginal Chlamydia trachomatis infection may persist for 2-3 years after birth**
- **Genital warts can occur in children with no other evidence of sexual abuse**
- **Bacterial vaginosis has been found in sexually abused children, but also in nonabused patients**

Hammerschlag M. Sexually transmitted infection testing in children: Sexual assault and abuse of children. *Clinical Infectious Diseases* 2011:53 (Suppl 3) S103-S109.
Bell TA, Stamm WE, Wang SP, Holmes KK, Grayston JT. Chronic Chlamydia trachomatis infections in infants. *JAMA* 1992; 267:400-2

Gonorrhoea Article Cited by Defense Attorneys

ELSEVIER

Available online at www.sciencedirect.com
ScienceDirect
Journal of Forensic and Legal Medicine 14 (2007) 489–502

JOURNAL OF FORENSIC AND LEGAL MEDICINE
www.elsevier.com/jflm

Review

What is the evidence for non-sexual transmission of gonorrhoea in children after the neonatal period? A systematic review

Felicity Goodyear-Smith MBChB, MGP, FRNZCGP *

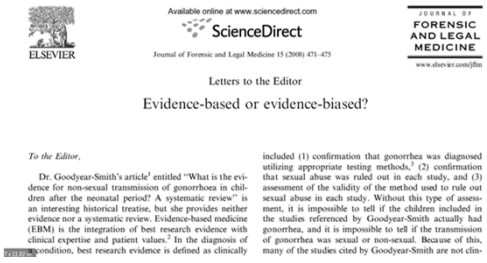
Department of General Practice and Primary Health Care, School of Population Health, Faculty of Medical and Health Science, The University of Auckland, PB 92019, Auckland, New Zealand

Received 13 December 2006; received in revised form 21 February 2007; accepted 2 April 2007
Available online 30 July 2007

Felicity Goodyear-Smith Article

- **New Zealand general practitioner**
- **"Systematic Review" article claims that Gonorrhea in kids is not sexually transmitted**
- **Due to fomite transmission from poor hygiene**

Response by Nancy Kellogg, MD and James Anderst, MD



ELSEVIER

Available online at www.sciencedirect.com
ScienceDirect
Journal of Forensic and Legal Medicine 15 (2008) 471–475

JOURNAL OF FORENSIC AND LEGAL MEDICINE
www.elsevier.com/jflm

Letters to the Editor

Evidence-based or evidence-biased?

To the Editor,

Dr. Goodyear-Smith's article[1] entitled "What is the evidence for non-sexual transmission of gonorrhoea in children after the neonatal period? A systematic review" is an interesting historical treatise, but she provides neither evidence nor a systematic review. Evidence-based medicine (EBM) is the integration of best research evidence with clinical expertise and patient values.[2] In the diagnosis of condition, best research evidence is defined as clinically included (1) confirmation that gonorrhea was diagnosed utilizing appropriate testing methods,[3] (2) confirmation that sexual abuse was ruled out in each study, and (3) assessment of the validity of the method used to rule out sexual abuse in each study. Without this type of assessment, it is impossible to tell if the children included in the studies referenced by Goodyear-Smith actually had gonorrhea, and it is impossible to tell if the transmission of gonorrhea was sexual or non-sexual. Because of this, many of the studies cited by Goodyear-Smith are not clin-

Contact Information

Barbara L. Knox, MD, Medical Director
University of Wisconsin Child Protection Program
blknox@pediatrics.wisc.edu
(608) 262-5087

Rachel Mitchell, JD, Bureau Chief
Maricopa County Attorney's Office
MitchelR@mcao.maricopa.gov
(602) 506-8556