Medical Findings in Child Sexual Abuse Cases Barbara L. Knox, M.D. Rachel H. Mitchell, J.D. Maricopa County Attorney's Office **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

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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)

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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'25, Jose M. Leedle, MD'2, Allin R. De Jong, MD'2, John Loudle, MD'2.

- > 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

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pub.311108s.	There were 20 positive samples obtained from children younger than
	10 years, 17 of these samples were obtained from children seen within
	24 hours of the assault. Three children had positive body samples
	beyond 26 hours after the asseudt including 1 child cositive for saftram
	amplace in the underwear and on the thighe 54 hours after the assault
	DNI was found in 11 shildren adedyounder than 10 years, including the
	shild seen 54 hours after the assault, Collection of evidence within 24
	hours of the assault was identified as an independent predictor of DN
	detection.
	CONCLUSIONS: Identifiable DM was collected from a child's body de-
	spite cases in which evidence collection was performed >34 hours
	beyond the assault, the child had a normal nonecute anogenital man-
	ination, there was no reported history of ejaculation, and the victim
	had bathed and/or changed clothes before midence collection. Fallure
	to conduct widence collection on propulertal children beyond 26

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

Ault Kits Forensic Evidence Coll Acute Child Sexual Ass	ection and DNA Identification in
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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

AUTHORIE Roberto Grander, MC-Kally Status, Ric- Statis Labell, MC-Yillan Mindra, MC-William Gardine, MC-Yillan, MC-William Annual, MSR-Y	WINT'S ENDING ON THIS SIGNACE: The Benerican Academy of Pediatrics recommends that benesic acidemic collection be considered for us to 12 hours after sexual ansatt. Data on shift
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PORTION STREAM FOR BUILDING SERVICE.	musts versus other specimens, and the correlation between physics findings and laboratory results.
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pels 3111 HB	IEEE/CE. There were 277 Andenor-collection kits analysed, 101 were collected from children younder than 10, 222 kits (BSO) had 1 or mon
	positive informations screening test, of which SE OSIG tested positive to
	DNA. The time interval to collection was <24 hours for 30 of the 5
	positive hits NSK positives with a documented time interval, and 2
	IESK of all positive kits? were positive only by nonbody specimens. The
	majority of children with DNI were aged 10 or older, but kits from to
	children younger than 10 also had a positive DM result, of which t
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STDs

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- 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?"

iena, 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 crossreactivity 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

Hammerschile M. Gaydos, C. Guidelines for the use of molecular biological methods to detect sexually transmitted pathogens in cases of suspected sexual base. *Nathords Med* 86. 2012; 903: 307-318.

Papp, J. Schachter, J. Gaydos, C. Van Der Pol, B. Recommendations for the liaboratory-based detection of Chilamydia trachomatis and Nessinal goornformac-2014. Centers for Disease Cortical ord Prevention Motifolity and Mortally Week Papert. 2014; 62(3): 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.



Hammenschipg M. Gaydos, C. Guidelines for the use of molecular biological methods to detect sexually transmitted pathogens in cases of suspecte sexual abuse. Methods Mol Ed. 2017, 2973-307-317.

Papp, J. Schachter, J. Gaydos, C. Van Der Pol, B. Recommendations for the laboratory-based detection of Chianydia trachomatis and Neisseria goorbrondes-2014. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, 2014; 53(2):1-1

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

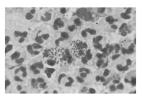
Postnatally acquired gonorrhea, syphilis, and non-transfusion related HIV are usually diagnostic of abuse

However, Exceptions Do Occur

Hammerschlag M. Sexually transmitted infection testing in children: Sexual assault and abuse of children. Clinica Infectious Diseases 2011:53 (Suppl 3) \$103-\$109. Centers for Disease Control and Prevention (CDC). Sexually transmitted diseases treatment guidelines 2010. MMV Recomm Rep 27010; 59:1-102.

Neisseria gonorrhoeae

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



erschlag M. Sexually transmitted infection testing in children: Sexual assault and abuse of children. Clinical Infectious ses 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) \$103-\$103. Beal TA, Stamm WE, Wang SP, Holmes KK, Grayston JT. Chronic Chlamydia trachomatis infections in Infants. JAMA 1992;

Gonorrhoea Article Cited by Defense Attorneys



ScienceDirect Journal of Forensic and Legal Medicine 14 (2007) 489-502

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 *

f General Practice and Primary Health Care, School of Population Health, Faculty of Medical and Health Science, The University of Auckland, Ph 90/19, Auckland, New Zealand Received 13 Documber 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



ScienceDirect

Journal of Foresic and Leval Medicine 15 (2008) 471–475

FORENSIC AND LEGAL MEDICINE

Letters to the Editor

Evidence-based or evidence-biased?

To the Editor

Dr. Goodyear-Smith's article¹ entitled "What is the evi dence for non-sexual transmission of gnoorrhoea in chil dren after the neonatal period'. A systematic review¹¹ an interesting historical treatise, but she provides neithe evidence nor a systematic review. Evidence-based medicin (EBM) is the integration of best research evidence with clinical expertise and patient values. ²In the diagnosis of cloded [1] confirmation that gonorrhea was diagnosed diffiling appropriate testing methods, 20 confirmation hat sexual abuse was ruled out in each study, and (3) sessement of the validity of the method used to rule out extra dispose in each study. Without this type of assessteem, it is impossible to tell if the cludder included in the studies referenced by Goodyear-Smith actually had nonerhea, and it is impossible to tell of the crausally of gonorrhea was sexual or non-sexual. Because of this, and of the studies cited by Goodyear-Smith are not clin and or the studies cited by Goodyear-Smith are not clin and or the studies cited by Goodyear-Smith are not clin

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