

Physical findings in sexual assault cases when victims delay reporting



An important role for the forensic examiner in cases of sexual assault is to document physical injuries [1]. Research has consistently shown that documented injury plays a significant role at multiple decision-making points during criminal justice proceedings such as the decision to report, prosecute, and convict [2]. The most significant predictor of documented anogenital injury in victims of sexual assault is the time interval between assault and forensic evaluation [3–6]. Therefore, most of the literature regarding anogenital injuries resulting from sexual assault is limited to victims examined within examined within 24-hour time frame. The purpose of this study was to compare the frequency and types of anogenital trauma in female victims examined acutely (<24 h) with those who presented for forensic examination 24–120 h following the sexual assault.

This retrospective, cohort trial evaluated consecutive females (>12 years of age) presenting to a community-based Nurse Examiner Program (NEP) over a 10-year study period. Women who declined forensic examination or could not recall details of the assault were excluded from the study. The NEP is a free-standing clinic that provides 24-hour comprehensive response to adolescent and adult victims of sexual assault. The facility is staffed by forensic nurses trained to perform medical-legal examinations using colposcopy with nuclear staining. Approximately 300 assault victims are evaluated at the NEP each year. Most patients come from law enforcement dispatch and crisis line contacts. Those sexual assault victims presenting directly to the four city emergency departments are transferred to the NEP for evaluation after triage and initial assessment [7]. This examination consisted of direct visual inspection, 1% toluidine blue contrast application, followed by colposcopy using a Cooper Surgical Leisegang® colposcope system with 30× magnification. After each technique, nurse examiners documented the types and number of anogenital injuries visualized using a standardized classification system [1,3].

Medical records were reviewed by one research nurse who was trained using a set of 12 “practice” medical records. One of the investigators met frequently with the abstractor to resolve questions. A second investigator performed a blinded critical review of a random sample of 10% of the charts to determine reliability. The interrater agreement on injury type and frequency was determined using the kappa statistic. Descriptive statistics were used to describe the frequency of anogenital injury, location, and type of injury (abrasion, laceration, erythema, ecchymosis, and edema). Chi-square and ANOVA tests were used to compare anogenital findings in victims examined. To reduce the inflated risk of a type I error that occurs when a large number of statistical analyses are conducted, we chose a p-value <0.01 for statistical significance. The study protocol was approved by the institutional review boards at Spectrum Health Hospitals in Grand Rapids.

A total of 2802 cases met the inclusion criteria of the study; 27.8% (779) delayed seeking medical care for at least 24 h following the assault. A total of 130 (4.6%) women were examined >72 h after assault. Victims who delayed seeking medical examination were younger, more likely to be assaulted by a known acquaintance or family member and were more likely to have used alcohol or drugs within 24 h of the assault. Not surprisingly, they were also more reluctant to report the assault to police (Table 1). The incidence of anogenital injuries decreased from 71.3% (95% CI, 69.6 to 73.0%) at <24 h to 34.3% (95% CI, 32.5 to 36.1%) at >96 h after the assault.

Out of the total study population, 42.6% (95% CI, 40.7 to 44.4%) were 19 years of age or younger. A total of 32.7% (95% CI, 12.7 to

Table 1
Patient demographics and assault characteristics (%)

	Acute presentation (<24 h)	Delayed presentation (24–120 h)	p
Total	2023	779	
Age of victim, mean (SD)	23.6 ± 10.3y	20.7 ± 11y	<0.001
Ethnicity (% white)	1479 (73.1)	559 (71.8)	0.48
Marital status (% single)	1517 (75.0)	571 (73.3)	0.35
Time interval to exam, mean (SD)	9.1 ± 5.9 h	58.1 ± 39.3 h	<0.001
Alcohol or drug use <24 h	957 (47.3)	466 (59.8)	<0.001
Police report filed	1697 (83.9)	499 (64.1)	<0.001
Known assailant	1594 (78.8)	672 (86.2)	<0.001
Use of weapons	333 (16.5)	141 (18.1)	0.31
Restraint used	861 (42.5)	340 (43.6)	0.57
Multiple assailants	265 (13.1)	98 (12.6)	0.72
Location: victim's home	668 (33.0)	243 (31.2)	0.36
History previous sexual assault	874 (43.2)	309 (39.7)	0.09
Type of sexual assault			
Vaginal	1437 (71.0)	539 (69.2)	0.35
Oral	399 (19.7)	146 (18.7)	0.55
Anal	247 (12.2)	70 (9.0)	0.02
Digital	544 (26.9)	197 (25.3)	0.39
Nongenital trauma	793 (39.1)	271 (34.8)	0.04
Nongenital injuries, mean	0.9 ± 0.7	0.7 ± 0.5	<0.001
Anogenital trauma	1442 (71.3)	437 (56.1)	<0.001
Anogenital injuries, mean (SD)	1.7 ± 1.0	1.0 ± 0.9	<0.001

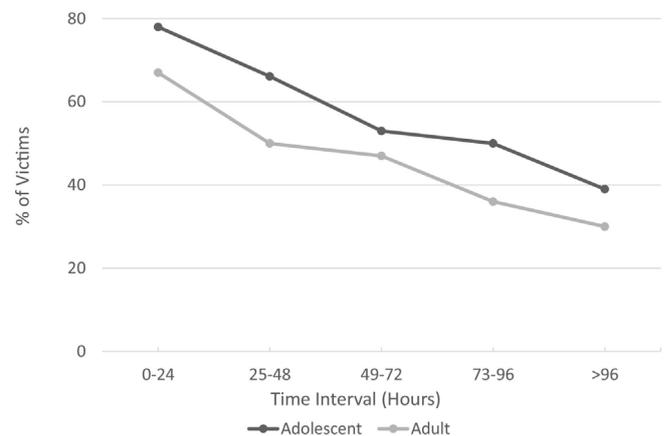


Fig. 1. Documented genital injuries in adolescents (N = 1192) and adults (N = 1607) as a function of the time interval between the sexual assault and the forensic examination.

15.3%) delayed seeking medical care for at least 24 h following the assault. When compared to adolescents examined within 24 h, adolescents who delayed seeking medical examination were more likely to have used alcohol or drugs within 24 h of the assault (58% vs. 47%, $p < 0.001$) and were also less likely to report the assault to police (71% vs. 85%, $p < 0.001$). Across all time periods adolescents had a consistently higher incidence of genital injuries compared to adults (Fig. 1). The incidence of anogenital injuries in this younger population decreased from 78.4% (95% CI, 76.1 to 80.7%) at <24 h to 38.7% (95% CI, 32.5 to 36.1%) at >96 h after the assault. The interrater reliability was excellent ($K = 0.90$).

Fig. 2 demonstrates the types of documented anogenital injuries as a function of the time interval between the assault and the forensic examination. Over a 5-day period, genital abrasions and lacerations (tears) decreased by approximately 60%. Ecchymo-

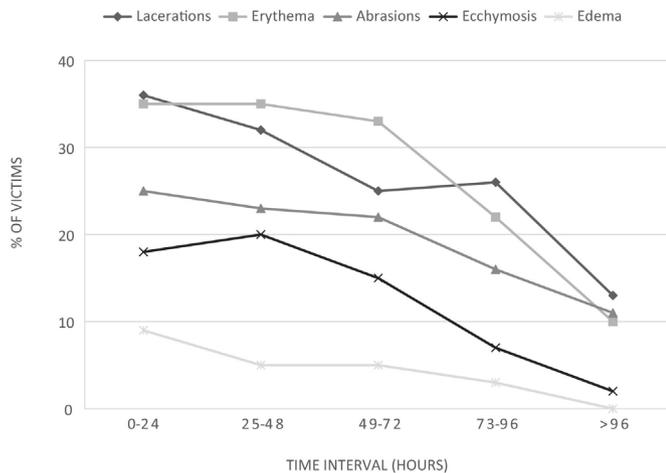


Fig. 2. Types of genital injuries as a function of the time interval between the sexual assault and the forensic examination (N = 2799).

sis was actually more common at 48 h and the degree of localized erythema did not significantly decrease until 72 h post assault. Not surprisingly, edema was not noted in any patient >96 h after the assault. The majority of all anogenital injuries occurred at one of four anatomic sites: fossa navicularis, hymen, labia minora, and posterior fourchette.

There are several limitations to this study. The most significant is our study design. We had to rely on the recorded information such as time of assault, time to presentation, and whether the victim knew the perpetrator. It is not possible to verify the accuracy of this information. We could not control for the clinical evaluations by different examiners. It may be that documentation was not uniform, although the nine nurse examiners had a similar level of training and experience. The findings of the examiners were recorded on state mandated reporting forms and were taken as the most accurate representation of the actual physical findings. Colposcopy, although generally being reliable at showing acute trauma such as abrasions and lacerations, may not show the subtler findings of erythema, ecchymosis, or swelling of tissues. Finally, our data reflect only victims of assault who presented to our NEP for post-assault care. While this urban setting may be representative of other large, medical centers, a more comprehensive examination of alternative treatment options would prove useful. Additional research focusing on women who are assaulted and do not reach out for treatment would also provide a greater understanding of how to best serve the needs of victims.

Overall 28% of adult women and 33% of adolescents presented to an urban sexual assault clinic >24 h after their assault. Age, history of recent alcohol and drug use, knowing the perpetrator, and reluctance to file a police report were all associated with delayed presentation. These results are consistent with other investigations examining delays in seeking medical care following sexual assault [8,9]. Millar and colleagues also demonstrated that the severity of a sexual assault prompted women to seek treatment immediately after the attack. Specifically, if weapons were involved, physical injury incurred and physical coercion or confinement was used in an assault, treatment was sought earlier [10]. Our data does not support this conclusion since there were no significant differences in weapon use or physical restraint in patients presenting acutely versus those who delayed medical care. In addition, a significant number of sexual assault victims who presented within 24 h of assault had no physical injuries documented. These findings are also consistent with other studies of sexual assault in adults and adolescents [1-3,8]. Treatment seeking behavior follow-

ing sexual assault is likely to be dependent on a complex constellation of demographic and assault-specific characteristics as well as socio-cultural issues [10].

Victims who delay reporting may still benefit from a medical forensic exam and the services sexual assault programs offer (e.g., crisis counseling, infection prophylaxis, pregnancy prevention) however forensic evidence may be lost or healed the longer examination is delayed. Even at 96 h following the sexual assault, one-third of women still had documented anogenital injuries. This and other similar studies give validity to extending guidelines for forensic examination out to 120 h post assault [9].

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