

E26 Biological Evidence in Sexual Violence Cases

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Learning Overview: After attending this presentation, attendees will have a better understanding of the importance of biological evidence in the sexual violence against women and children.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by increasing awareness of the importance of biological evidence in sexual abuse cases and all dimensions of the forensic aspects. Biological evidence is sometimes the only way to demonstrate that sexual contact occurred and to identify the perpetrator.

Sexual crimes involve a sexual purpose committed without the consent of the victim (mostly women, but also children and men) that cause many short- and long-term health problems.^{1,2} Biological evidence collected for DNA studies is considered the most important legal evidence due to its usefulness in determining the existence of sexual contact and the identities of suspects. Biological evidence is sometimes the only way to demonstrate that sexual contact occurred and to identify the perpetrator.³ According to Adam's criteria, one of two criteria that allows a diagnosis of sexual abuse is the presence of semen in samples taken from the victim's body.³⁻⁵ This study examined cases that applied with a claim of sexual violence with the aim of demonstrating the importance of a timely and high-quality forensic medical examination.

In this study, the consents of 61 victims who were referred to Adana Çukurova University School of Medicine Forensic Medicine Department by judiciary authorities between January 1, 2017, and December 31, 2019, as sexual abuse or assault cases within the first seven days of the alleged incident. The study data was computerized and evaluated with Statistical Package for the Social Sciences (SPSS); 41.0% ($n=25$) of the examination of the results of swabs returned positive DNA results. In terms of swab results and application times, the rate of positive results was significantly different in the first 24 hours ($p=0.016$). It was reported that the ratio of DNA obtained from vaginal swabs was 35% on the first day, 26% on the second, and 23% on the third day, and significantly decreased after the third day. DNA was identified in 22% of anal swabs and 41% of skin swabs taken in the first 24 hours, and this ratio decreased to 5% in anal swabs and 14% in skin swabs taken at 24–48 hours.⁶

Clothes were collected from 34.4% ($n=21$) of cases for examination; 61.9% ($n=13$) of these samples collected, such as clothing and underwear, after abuse returned positive results. In terms of clothing examination results and application times, there was no statistically significant difference between groups ($p > 0.05$). Dry secretions on clothing were quite stable, allowing semen to be detected for longer than one year. It is reported that sperm can be detected in cotton fabric or paper samples that are dried before storage.⁷

The timing of the examination in sexual violence cases, especially in cases that require acute intervention, should be set based on the patient's convenience. However, in order not to lose therapeutic opportunities such as emergency contraception, to avoid changes in physical evidence such as injuries, not to lose forensic material that may be used as evidence of contact by the perpetrator, including blood and semen, access to medical services should not be delayed and should be rapidly carried out.⁸ Studies confirm that in cases where the examination of prepubertal children is carried out within the first 24 hours after the assault, DNA can be isolated in most cases.^{4,9,10}

It was reported that the half-life of sperm in the vaginal cavity depends on the victim's age, and in cases where sperm is localized in the cervix, its half-life may be more than 72 hours. In post-pubertal females, it is reported that spermatozoa can remain mobile for 6 to 12 hours in vaginal secretions and 5 days in the cervix, while in pre-pubertal female, the half-life of semen is shorter due to the lack of cervical mucus.^{3,7} It is noted that the reported half-lives generally indicate estimates, and variables such as the victim's gender, age, activities after sexual contact (such as urinating, excreting, vomiting, brushing teeth, having a bath, eating, drinking, smoking, spitting, running, and walking), condom use, and azoospermic perpetrators will also influence the results.³

A high-quality forensic medical examination may potentially confirm and/or relieve the sexual assault victims' concerns, minimize their trauma, and support their recovery. Additionally, the collected evidence may help reveal the material truth during the criminal investigation, leading to the execution of criminal sentences and the prevention of further sexual violence.¹¹

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