

# CASE REPORT

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## The Evidence Notwithstanding—A Case Report on a Rape

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**ABSTRACT:** This report concerns the rape of a woman by a stranger. The complainant stated that, during the course of the rape, penetration took place without ejaculation: these details were later confirmed by a suspect. This suspect, who was identified by the complainant, confessed and was convicted.

Laboratory findings, however, indicated that the suspect could not have been the source of the semen found on the complainant's underpants. Further, a vaginal swab taken from the complainant contained intact sperm cells, an indication of a recent sexual contact.

In spite of the presence of semen on the underwear which could not have come from the suspect, and the nonoccurrence of an ejaculation during the rape, the complainant maintained that she had not had a sexual contact for a month prior to the rape. This apparent contradiction and its implications are discussed.

**KEYWORDS:** criminalistics, criminal sex offenses, privacy, rape, human rights

In most cases in which laboratory results exclude a suspect's involvement in a crime, legal charges are not brought. We report on a case of a suspect being convicted of rape despite laboratory findings indicating his noninvolvement. Possible explanations for the laboratory findings are discussed.

### Case Report

Approximately 6 h after reportedly being raped, a 24-year-old woman was taken to a hospital for examination. A sex crime evidence collection kit was used to take samples, including a vaginal swab. The sex crime kit and the complainant's underpants were submitted to the forensic biology laboratory for examination.

Acid phosphatase (ACP) was used to detect the possible presence of seminal fluid on the rape victim's undergarment. Subsequent microscopic examination of material from the crotch of the garment, which was ACP-positive, and from the vaginal swab confirmed the presence of sperm cells. The sperm cells from the vaginal swab were found to be intact, that is, having tails.

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Two laboratory tests were carried out on the semen found on the underclothing and the swab in order to include or exclude potential suspects as the source of the semen.

The first test carried out was that of blood grouping. Blood group substances are present in body fluids, including semen and vaginal fluid, in about 72.5% of the population [1]. Individuals with detectable blood group substances in their body fluids are termed secretors, while those lacking blood group substances in their body fluids are termed nonsecretors. In most cases, the secretor status can be determined by testing for Lewis (Le) antigens on red blood cells.

The complainant's blood group in the present case was that of a Group O secretor [Le(a - b +)]. By the inhibition test, antigen H, the structural component of blood Group O, was found on the complainant's underpants and on the vaginal swab. The suspect's blood, subsequently tested, proved to be that of a Group B nonsecretor [Le(a + b -)].

The second test carried out on the semen stains was the phosphoglucomutase (PGM) assay. PGM is an enzyme that is present in blood, semen, and vaginal secretions, as well as in other body tissues. PGM exhibits genetic polymorphism (that is, has various forms) in the population. Each individual, however, has only one PGM type, which is consistent throughout all his or her body fluids and tissues. The distribution of the three major PGM types, 1, 2-1, and 2, in the population is about 59, 35.2, and 5.8%, respectively [1].

Material from the semen stain on the underwear was found to contain PGM 1 by the starch gel electrophoresis method. No enzymatic activity was detected on material from the vaginal swab. Both the complainant and the suspect were found, by the PGM assay carried out on their blood, to be of the same PGM type, namely, 2-1 (Table 1).

The complainant identified the suspect as her assailant. In court, the suspect confessed and gave a complete description of the events of the rape, including details of a conversation held with the complainant. The suspect's version of the events, including the fact that penetration had taken place without ejaculation, was confirmed in the complainant's statement.

For this rape, another rape, and a sexual assault on a child, to which he also confessed, the suspect was sentenced to ten years in prison.

In light of the suspect's confession, the laboratory findings were not considered relevant to the case and expert testimony was not presented.

## Discussion

In this rape case, the blood grouping results on the semen stain from the underpants and the vaginal swab were of the same type as the complainant's blood group, namely, Group O. The absence of the other blood group antigens (A or B) does not necessarily imply that the semen was from a nonsecretor, such as the suspect. These other blood group antigens may have been present, but in insufficient quantities for detection. Conversely, the antigens, if present, may have been altered or degraded so as not to be detectable. A further possibility may have been that the semen on the underpants and the swab came from an individual of blood Group O, the same as that of the complainant. In such a case, the blood group antigens in the vaginal fluid and semen would have been indistinguishable. In other words, the blood group results may have been from either or both of these two body fluids.

Unlike the blood grouping results, the PGM results did not present a problem in interpretation. The semen on the underpants came from an individual who was a PGM 1. This PGM result eliminated the suspect (who was PGM 2-1) as the source of the semen on the complainant's underpants. Moreover, there was no indication that the complainant's vaginal fluid PGM (which was also PGM 2-1) was contained in the semen stain from the undergarment. The problem of mixtures of body fluids in the interpretation of PGM results has been discussed elsewhere [2,3].

TABLE 1—Assay results of the semen from the underpants and the vaginal swab and the bloods of the complainant and suspect.

Blood Group System	Underpants	Vaginal Swab	Complainant's Blood Characteristics	Suspect's Blood Characteristics
PGM type	1	no result	2-1	2-1
ABO group	O	O	O	B
Lewis group	not tested	not tested	Le(a - b +)	Le(a + b -)
Secretor status	-	-	secretor	nonsecretor

The question of the source of the semen on the underpants and swab remained unresolved. The PGM results confirmed that the suspect could not have been the source of the semen on the complainant's underwear. With respect to the vaginal swab, no genetic markers were found that allowed either inclusion or exclusion of the suspect as the source of the semen. However, the finding of intact sperm cells on the vaginal swab indicated that a recent sexual contact had taken place. Intact sperm cells can be expected to be found in the vagina for up to 16 hours after a sexual contact [4]. Finally, in spite of concurring with the suspect that ejaculation had not taken place during the rape, the complainant maintained that she had not had a sexual contact for a month prior to the rape.

The reason for the complainant's denial of the apparent sexual contact, apart from the rape, was not evident. Possibly, such an admission may have been viewed as an invasion of privacy or as entering into matters of an intimate nature which were not considered relevant to the rape. On the other hand, if the victim was under the influence of alcohol or drugs or was otherwise unconscious, it might have been possible for a sexual contact to have taken place without the woman's knowledge. Such a sexual contact without a woman's prior consent may also constitute rape.

Consequently, for both forensic science and legal purposes, it may be important to establish the validity of a complainant's denial of having had a sexual contact prior to being raped. In the present case, for instance, had the suspect's PGM been Type 1, the complainant's denial of a sexual contact other than the rape might have contributed to the incorrect conclusion that the semen on the underpants had come from the suspect.

In this case, the credibility of the complainant's testimony was never questioned. As the suspect made a full confession and gave a complete description of the rape, expert testimony was neither presented nor challenged. The suspect was convicted of rape and sentenced.

## References

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