
Communications

Sperm and Acid Phosphatase Examination of the Rape Patient: Medicolegal Aspects

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The medical testimony in the case of alleged rape is usually of crucial importance. The physician must be prepared to describe the victim's condition, both mental and physical, and then will often be asked as an expert witness to interpret certain laboratory findings obtained during the examination. It is extremely important that the physician be aware of recent controversial changes in the meaning of findings concerning sperm and acid phosphatase, for he or she may be facing a lawyer who has recently reviewed this information. In any case it is the physician's responsibility to have obtained proper specimens and to be able to inform the court of the implications of the results.

Examination Procedures

The finding of sperm on examination remains the essential condition of intercourse, both legally and in the minds of the judge and jurors. In recent years, however, acid phosphatase has been shown to be of equivalent value when found in adequate concentrations in the vaginal vault. It is found in high concentration even in azoospermic rapists. (There are multiple causes of azoospermia including congenital atrophy; undescended testicles; or-

chitis from mumps, tuberculosis or gonorrhea; coitus interruptus; and vasectomy.¹⁾

It is of paramount importance when examining for sperm to obtain the correct specimens and to document and label them appropriately. Some authors recommend vaginal washings (1 to 2 cc of normal saline), while others suggest the use of an absorbent swab to determine acid phosphatase. Both wet mounts and permanent slides are necessary for the sperm examination. Both specimens are usually obtained from the inferior fornix, but at times specimens are also obtained from the cervix. The wet preparation is placed on a slide and examined immediately for motile or nonmotile sperm.

Within 12 to 24 hours of intercourse or rape, sperm have been found in 30 to 60 percent of women examined.²⁻⁶ Only occasionally is acid phosphatase positive when sperm are not found.^{2,4,5,7} A few authors, however, have found acid phosphatase valuable in the absence of sperm more than 10 percent of the time, especially in the 12- to 24-hour period.^{8,9} Considering the possibility of azoospermia, acid phosphatase must be looked for when sperm are not found on the wet preparation.

Recent studies have shown a remarkable disparity in sperm survival when vaginal and cervical secretions are compared. This is certainly logical on teleologic grounds. Motile sperm can be found in vaginal secretions for an average of 3 to 4 hours, but may be seen occasionally for 12 to 24 hours.¹⁰⁻¹² Conversely, on the cervix, motile sperm can be found for up to seven days after intercourse.¹²⁻¹⁵ Nonmotile sperm are commonly found in vaginal

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secretions for 7 to 12 hours, occasionally at 24 hours, and rarely at 3 days; however, on the cervix they can be found for 7 to 17 days.¹²

After consideration of the above, it becomes obvious that the specimen(s) for sperm analysis must be obtained from one or both locations depending on the clinical history. Slides from the vagina, avoiding the cervix, should always be done. If they are positive for motile sperm on the wet preparation, intercourse has usually occurred within 3 to 8 hours, though rarely within 24 hours. When nonmotile are found (either on the wet or permanent slide), intercourse was probable within 12 to 18 hours, though rarely within 24 to 48. Within a reasonable likelihood of no consenting intercourse within five days, cervical specimens are obtained. This would commonly be the circumstance for young girls, adolescents, or perhaps a kidnapped or other elderly rape victim. A rape trial is traumatic enough; most cases would not be helped by forcing the victim to alibi for 17 days of abstinence.

Specimens for acid phosphatase determination can be obtained either via cotton or dacron swabs or by vaginal aspirates or washings. This should be predetermined according to the wishes of the crime laboratory or forensic pathologist processing the specimen.

Apparently good but quite contradictory studies concerning acid phosphatase sampling, values, and laboratory methodology abound in the literature. Whereas the majority of authors have used swabs to obtain specimens,^{1,2,6-8,16,17} a few have used washings.^{9,18,19} The most commonly used method employs sodium thymolphthalein. Recent intercourse is proven by a value in units per liter of 50,^{2,16} 300,^{8,17} or 600 units.⁹ Probable intercourse is indicated by values of 10 to 50,¹⁶ 30 to 50,² 50 to 600,⁹ or 100 to 300 units.¹⁷ Alphanaphthyl phosphate can be used in a purely qualitative method¹ or in a quantitative method with values of 25 King-Armstrong units,¹⁸ or with 50¹⁹ or 2,000⁹ IU/L being significant. Other methods (with positive values in parentheses) are Acid Phos Reagent Set⁶ (2 units; 0.6 to 1.9 units indeterminate) King-Armstrong Gutman⁸ (300 King-Armstrong units) and paranitrophenyl⁷ (20 sigma units). Although there is a variability, multiple studies seem to indicate that an appropriate value for the particular acid phosphatase test being used indicates intercourse usually within 24 to 36 hours, but rarely up to 72 hours.^{1,2,6,7-9,16-19}

Summarizing, if appropriate specimens are obtained and analyzed, it is often possible for the physician to place a patient or victim's intercourse within a time frame. Depending on the particular findings and recent intercourse history, this can be extremely useful to the prosecution (or defense) in a rape trial. Needless to say, the absence of these findings in no way excludes recent or remote intercourse.

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