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SIMULATED SPERMATOZA

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In the microscopic examination of smears from the vaginal vault or other regions, it is not uncommon to observe structures that are similar in shape to spermatozoa. This is especially common in smears that have been made from the body of a person that has been dead for a number of hours. During the early phases of postmortem disintegration of the blood cells changes occur which predispose to rupture of cell membranes when smeared, and in the preparation of smears for microscopy, the chromatic material of the nuclei is often drawn out into elongated processes.

In one case which has come to our attention a pathologist mistakenly interpreted some of this nuclear material to be spermatozoa, and it is in the hope of preventing recurrence of this serious error that the present communication is prepared.

A blood stained cotton dressing gown had been found beside a road one morning and was taken to a police laboratory for examination. The garment appeared to have been clean prior to the event which led to its being stained with blood, and there were no signs of wear that might support the idea that it had been discarded and was being used as a rag. The back of the garment was soaked with blood from the level of the waist down, and there were extensive bloody areas on the front of the lower part of the garment. There were also irregular thin stains over the upper part of the garment. The blood was almost entirely dry, but there were a few small moist clots in the area where the blood was thickest.

The questions which appeared to require prompt answers in this case were: 1. Was this human blood? 2. What was the type of the blood, if human? 3. Had the bleeding been the result of an abortion, miscarriage, or delivery; or was it the result of hemorrhage from injuries? Or was it simply menstrual blood?

Some of the partially dried blood clot was mixed with salt solution, and a suspension of cells was thereby obtained that was suitable for determining the type of the blood, including the MN and Rh groups. Some of the blood was also smeared over clean glass slides, and these smears were fixed in 10% formalin solution while they they were still moist. Some were then stained with hematoxylin and eosin while the others were stained with Sudan IV for fat. Precipitin tests with the blood revealed that it was of human origin.

In the smears of clotted blood that had been stained with hematoxylin and eosin there were structures that were interpreted as being partially disintegrated spermatozoa. This became a matter of some importance in the case, and the slides were examined by other pathologists who recognized the structures as distorted nuclei from

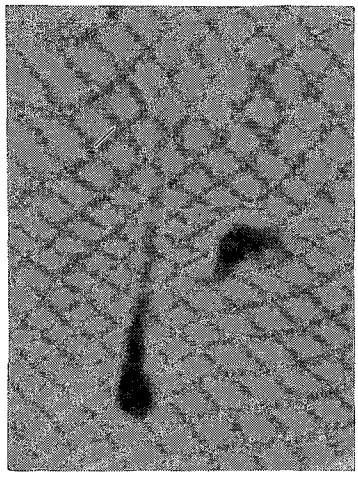

FIG. 1

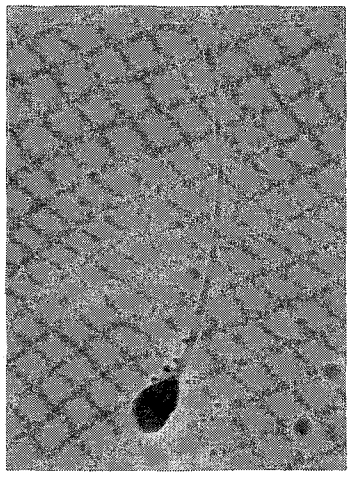

FIG. 2

Figure 1. Simulated spermatozoan. Nuclear material from a disintegrating leukocyte. (H & E, × 1000)

Figure 2. Spermatozoan. (Ziehl-Neelsen Stain, × 1000)

fragmented leukocytes (white blood cells) (Figures 1 and 2). It was possible to observe a complete transition series between these artefacts that resemble spermatozoa and the nuclear material of ruptured polymorphonuclear leukocytes.

The fixation of the moist smears in the solution of formaldehyde had completely destroyed most of the red blood cells, only a few masses that had presumably dried more completely before they were fixed being present in the peripheral portions of the smears. Large numbers of well preserved leukocytes were present on the slides, since these cells are not so readily destroyed by hypotonic solutions. A number of ruptured leukocytes and fragments of nuclei were also scattered about, and it was this latter material that had been erroneously accepted as spermatozoa.

The characteristics of spermatozoa are described in several standard books (1, 2) available to police scientists and pathologists, and their appearance must be typical if identification is to be accepted. One of the best techniques for demonstrating their anatomy is the examination of unstained dried smears with the high dry objective lens of a microscope while the light is dimmed with the iris diaphragm. Phase contrast microscopy of similar smears also gives excellent results.

Smears can be stained with methods that differentiate the anatomy of the head, neck, and tail of the cells. The Ziehl-Neelsen stain or the Giemsa blood smear stain are satisfactory and can be used to differentiate spermatozoa from disintegrating leukocytes.

Another valuable test for differentiation is the acid phosphatase test for seminal fluid (3). When the garment in the case described above was subjected to this test, acid phosphatase was not detected.

REFERENCES

1. MORITZ, A. R.: PATHOLOGY OF TRAUMA, Philadelphia, Lea & Febiger, 1954.
2. TURNER, R. F.: FORENSIC SCIENCE AND LABORATORY TECHNICS, Springfield, Chas. C Thomas, 1949.
3. WALKER, J. T.: New Test for Seminal Stains, NEW ENGLAND J. MED., 242, 110, 1950.