سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

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بالرسالة صفحات لم ترد بالأصل

DIAGNOSIS OF LEUKOCYTOSPERMIA

THESIS

Submitted for Partial Fulfillment of
Master Degree in
Dermatology , Andrology & STDs

By

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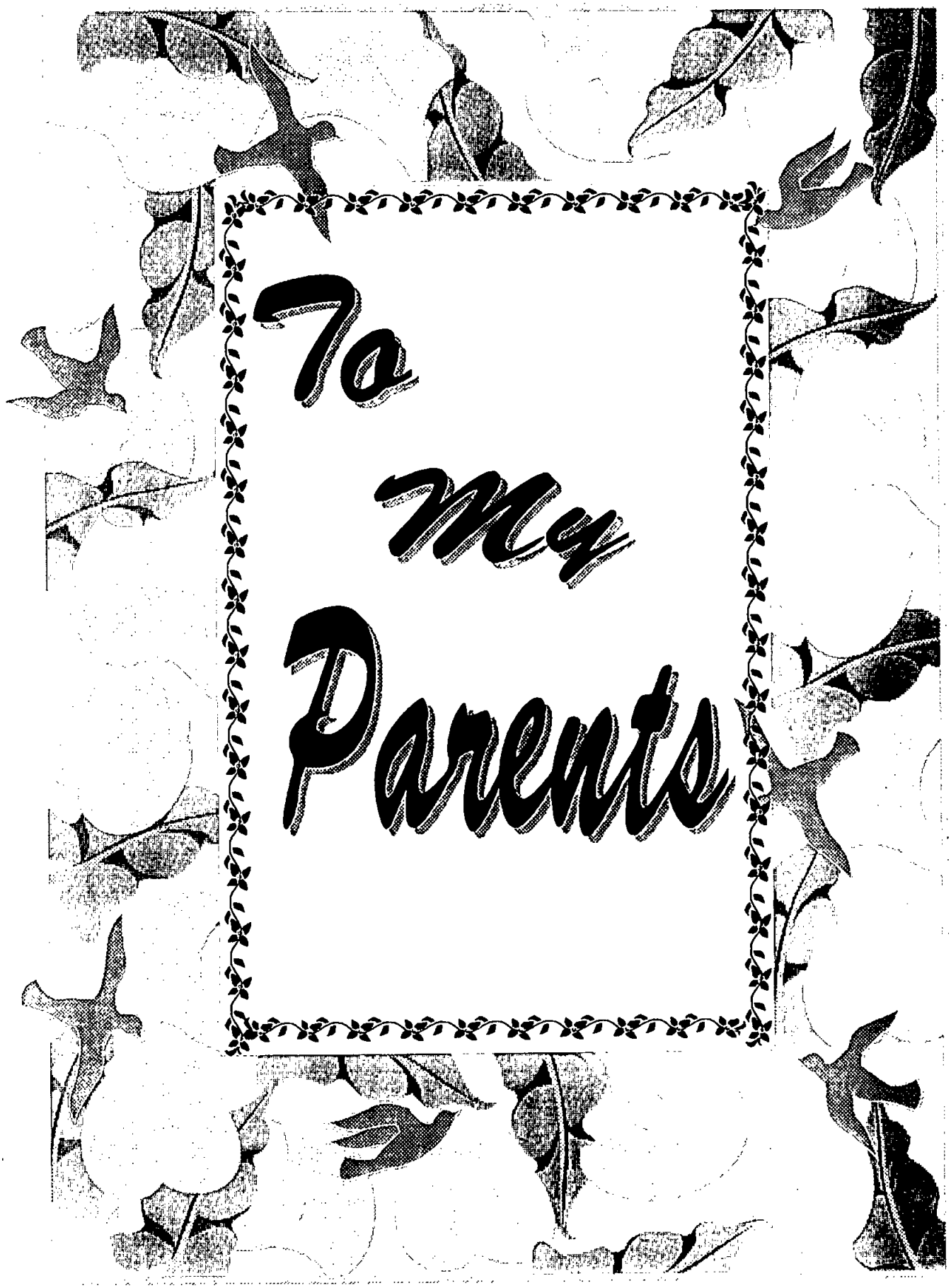
To My Parents

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INTRODUCTION AND AIM OF THE WORK

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Human semen contains cells other than spermatozoa. These include epithelial cells from urethral tract, germ cells and white blood cells *(WHO, 1987)* . Leukocytospermia refers to the presence of pathological number of white blood cells in semen (> 10^6 /mL , *WHO, 1987)*. Several studies have demonstrated that leukocytospermia is associated with semen samples of poor quality *(Caldamone and Crockett, 1981; Wolff et al. 1990)* and impaired in vitro fertilization attempts *(Berger et al., 1983)*. Other studies denied this assossiation *(El-Demiry et al., 1986; Weidner et al., 1991; Tomlinson et al., 1993)*.

A reliable detection and quantification of leukocytes in semen would be of value in both diagnosis and treatment of male infertility. However, because of morphological similarity between germ cells and white blood cells it is impossible to reliably differentiate these cells whether under wet mount light microscopy or with conventional stains like modified Papanicolaou stain *(WHO, 1987)* and Bryan-

Leishman stain *(Couture et al., 1976)* . Those methods proved to be unreliable because they need an expert to distinguish between different cell types beside being difficult to perform *(Wolff and Anderson, 1988a)*.

Numerous researches have been undertaken to develop quicker and more objective methods to analyze leukocytes in semen. These methods include staining semen with labeled monoclonal antibodies directed against leukocyte surface antigens *(El-Demiry et al., 1986; Wolff and Anderson, 1988a)*; detection of leukocyte enzymes such as peroxidase *(WHO, 1987)*, elastase *(Wolff and Anderson 1988b)* and esterases *(Wolff et al., 1992)* and leukocyte products, such as, oxygen radicals *(Kovalski et al., 1991)* and IL-8 *(Shimoya et al., 1993)*; and the use of flow cytometry *(Kaspar et al., 1991)*.

An ideal method for detection of leukocytes that is appropriate for an infertility clinic should be fast specific, easy to interpret and cost effective. Some of the techniques mentioned above are laborious and of high cost. Others can be suitable for use in routine detection of leukocytes in semen.

The aim of this work was to compare and evaluate the Peroxidase test and Cytur test for suitability in a clinical setting.

Peroxidase test was evaluated because it is easy to perform and recommended by WHO, Cytur-test because it is easy and rapid. Because Cytur test is not commercially available in Egypt, Combur 9 test *(Boehringer, Mannheim, Germany)*, which depends on the same principle as that of Cytur and yet available, was included in this study.

REVIEW OF THE LITERATURE

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ROUND CELLS IN SEMEN

The human semen composes of two compartments: seminal plasma and cells. Seminal plasma constitutes the majority of semen volume. Cellular compartment represents only less than 1% of the whole ejaculate volume *(Tauber et al., 1976)*.

The cellular compartment of the semen includes spermatozoa, epithelial cells from the urethral tract, spermatogenic cells and white blood cells (WBCs). "Round cells" is a term applied to describe spermatogenic cells and WBCs as both appear as rounded cells under light microscopy *(WHO, 1987)*. In fertile individuals round cells usually represent less than 5% of the total cellular content of the ejaculate *(Wolff and Anderson, 1988a)*. They may be increased in cases of infertility associated with infection, varicocele or hormonal alterations of normal spermatogenesis *(Homyk et al., 1990)*.

Spermatogenic Cells

Spermatogenic cells in the ejaculate are immature germ cells i.e. have not completed their developmental process. They are classified according to their staining and morphological characteristics. In general, their nuclei stain violet to purple and the cytoplasm is grey using Bryan-Leishman stain. They include spermatogonia, spermatocytes and spermatids.

Spermatogonia: (type A, nuclear diameter 6 to 7 μm)

These cells usually contain one or two nucleoli that may be seen resting on the edge of the nucleus within characteristic 'halos'.

Primary Spermatocytes: (Nuclear diameter 8 to 9 μm).

They have a large spherical dark violet to purple nucleus in a grey cytoplasm. The nucleus is usually homogenous, but occasionally chromatin threads are seen.

Secondary Spermatocytes: (nuclear diameter 7μm)

These cells stain exactly as primary spermatocytes, but are smaller in diameter. In contrast to lymphocytes the nucleus is spherical.

Sab Spermatids :

These cells are usually spherical in shape and 4 to 5 μm in diameter. The acrosomal cap can sometimes be seen as a small magenta crescent-shaped protrusion on one side of the cell. The remainder of the cell generally stains dark purple. Several spermatids may share a common cytoplasm but are distinguished from polymorphnuclear leukocytes by the lack of granular cytoplasm, the absence of nuclear bridges and their spherical shapes. Spermatids may sometimes show the presence of fused acrosomes.