HAEMATURIA

ESSAY

SUBMITTED FOR PARTIAL FULFILMENT

OF THE MASTER DEGREE OF **UROLOGY**

PRESENTED By :

ABDEL JAWAD ABDEL HALIM ROKBAH

SUPERVISED BY

Dr. FAROUK M. FAHMY

Prof. of Urology

Ain Shams University

Dr. ABDEL FATAH M. AGOUR

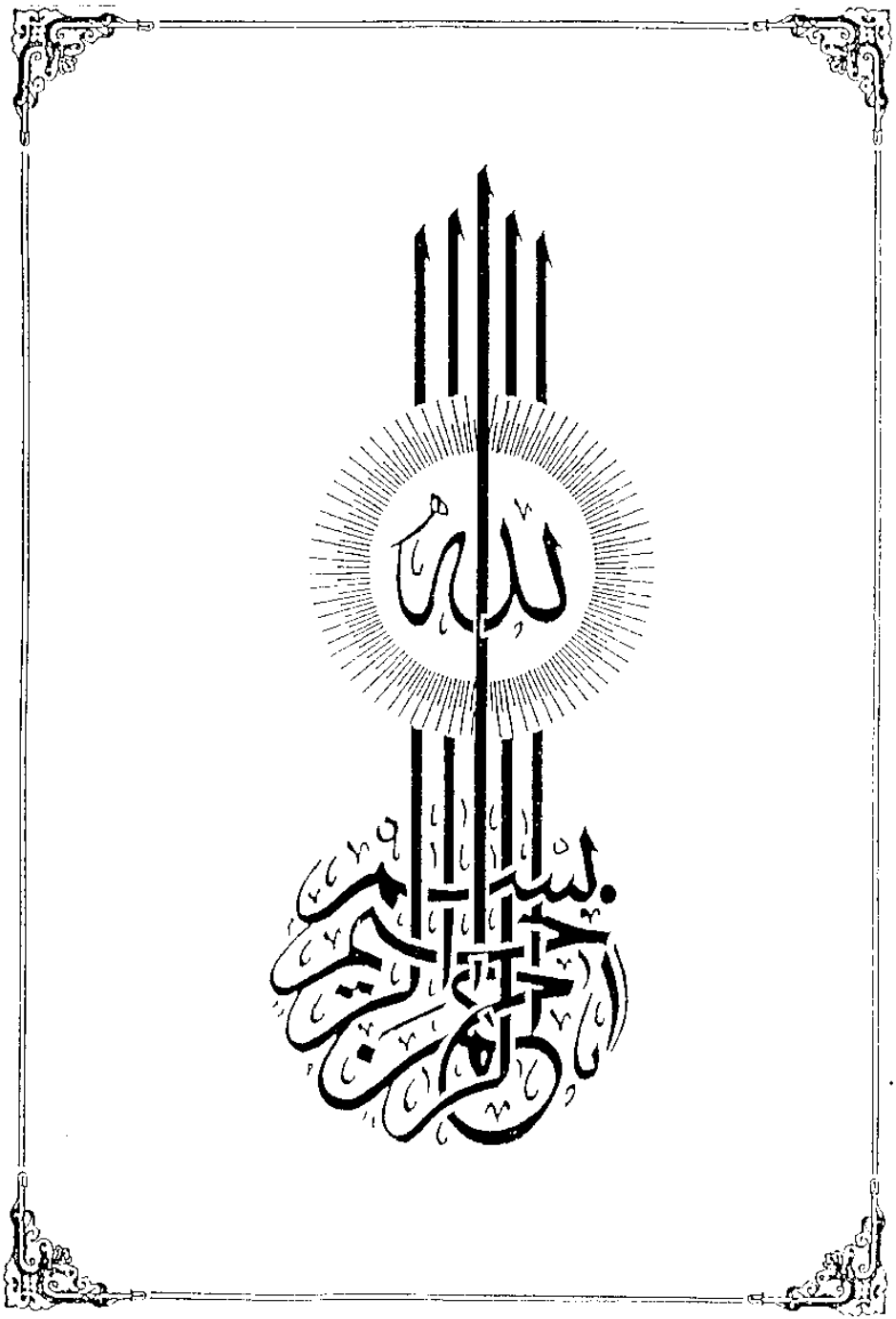
Prof. of Urology

Ain Shams University

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY

1987

TO THE MEMORY OF MY FATHER



ACKNOWLEDGEMENT

I would like to express my deepest gratitude to Prof. Dr. FAROUK FAHMY, Prof. of urology Faculty of Medicine, Ain Shams University for his continuous kind supervision encourgement, sincere help and valuable advice throughout the course of this work.

I am also thankfull to Prof. Dr. Abdel Fatah M. Agour Prof. of urology, Faculty of Medicine Ain Shams university for his kind supervision.

Realy I feel pleasure and honour to work under their supervision.

I wish to extend my thanks to all stuff members of urology, Ain Shams University for their encourgement and help in achievement of this work.

I N D E X

INTRODUCTION

Hematuria may be defined as the excretion of abnormal quantities of erythrocytes in the urine. Hematuria should always be regarded as a sign of disease originating in the kidneys, of lesions present any where along the urinary tract from the renal pelvis to the distal urethra or as a consequence of a systemic disease which has only secondarily affected the kidneys and urinary system (Glassock, 1983).

Hematuria may be present continuously or intermittently, it may be macroscopic or microscopic or the two forms may alternate. Hematuria per se is usually asymptomatic, although if due to passage of blood clots, it may be accompanied by renal colic (Hendler, et al., 1972).

The presence of blood in the urine is detected in one of two forms, gross blood is visualised with the naked eye, while microscopic hematuria looks clear grossly but a number of red cells are visualized microscopically (Dennis et al., 1978).

A basic problem in evaluating hematuria is the large number of diagnostic possibilities. The causative may be suspected after the initial history and physical examination, and can be confirmed with appropriate studies. The addition of standard tests such as urine culture, intravenous pyelography, and cystoscopy will reveal the source of hematuria in many other cases, and will bring the percentage of patients with a clear diagnosis up to 60% or 70%. The physician must be careful in selecting further studies in the remaining patients, since the procedures necessary for diagnosis may be expensive, unpleasant, and potentially harmful.

Hematuria is a commonly encountered problems in clinical practice. The physician may see not only an occasional patient alarmed after having possed dark or obviously bloody urine, but also many other individuals unaware of the increased numbers of red cells present in their urine. Such microscopic hematuria may be noticed during the course of an illness or discovered during a routine examination of an asymptomatic individual. Despite the usually asymptomatic nature and

frequent occurrence of hematuria, this urinary abnormality may be a sign of serious conditions such as, malignancy drug toxicity, infection, and urinary tract obstruction. Some of these conditions may even be found in individuals especially adults, with less than 10 red cells per high-powered field on microscopic examination of the urinary sediment. Therefore, in most cases an attempt should be made to arrive at a diagnosis (Abuelo, 1983).

CLASSIFICATION AND DETECTION

Hematuria can be classified in two ways:

1. Quantitative:

In the form of gross (macroscopic) hematuria if it is evident to the naked eye, and microscopic if it is only detected by microscope.

2. According to the time of its appearance during voiding:

* Initial: in lesions of the posterior urethra.

* Terminal: in lesions of the prostate and bladder.

* Total: in lesions of the bladder, ureter and kidney (F. Fahmy, 1986).

Gross hematuria occurs in a significant number of urologic patients and often results in hospital admission for diagnostic evaluation or therapy. In 1933 Rathbun noted that 13.5% of 1500 consecutive urologic admission were admitted with gross hematuria. In 1941 Cahill reviewed 24000 urologic admissions over a ten

year period and found that 23% were admitted with gross hematuria.

In 1977 Carter III and Rous noted that 10.5% of 1050 adults studied, were presented with gross hematuria. In 1082 Froom, Ribak and Benbassat reviewed 1000 asymptomatic male air force personel who were examined retrospectively for the results of yearly examinations of urinary sediment. The cumulative incidence of two to four or more red blood cells per high power field found at one or more examinations was 38.7% after an average of 12.2 yearly examinations per person.

Asymptomatic microhematuria is a common finding occuring in 13% of adult men and postmenopausal women in Rochester Minn. Previous recommendations to perform cystoscopic and excretory urographic examinations on all patients with this finding were based on findings in referred patients. In the present population-based study, the frequency of serious urologic disease in patients with asymptomatic microhematuria was 2.3% only 0.5% had bladder or renal cell carcinoma. Urologic

malignant lesions occurred frequently in the elderly. There was a trend toward more serious diseases in those with higher grades of hematuria. Complete urologic investigation of all patients with any degree of asymptomatic microhematuria cannot be recommended. The presence of other risk factors should be considered in opting for further evaluation (Mohr-D-N, et al., 1986).

To evaluate the etiology of microhematuria the cases of 200 consecutive patients with asymptomatic microhematuria who had undergone complete urologic examination and two-year follow-up were reviewed. Most patients were 50 to 59 years old. Highly significant urologic lesions were found in 20% of patients. Thirteen percent of these patients had a genitourinary malignant neoplasm. No urologic lesion could be identified in 19% of patients in this group. The results suggest that present diagnostic modalities have substantially refined and improved the urologist's diagnostic abilities. The urologic examination of patients with asymptomatic microhematuria, particularly elder than 40 years, is justified (Carson-C-C, et al., 1979).

In order to determine whether patients with microhematuria seen in general practice should be followed up in order to establish an aetiological diagnosis, a study was performed in a general practice in Vienna. Over a period of 2 ½ years 87 patients with hematuria were found by a systematic procedure among a clientele of 2500 persons. This gives a one-year incidence rate of about seven per 1000. By systematic investigation, three main groups of patients could be found: patients with microhematuria and additional leukocyturia and bacteriuria (40%), most of them needing no further investigation after treatment of their urine infection; patients with microhematuria showing different degree of pathological changes after a complete urological check-up (43%), patients where the complete check-up did not reveal any aetiological diagnosis (13%), (Tonies-H, 1986).

The detection of erythrocytes in urine is relatively simple but the clear separation of normal from abnormal rates of excretion may be more difficult, especially when using semiquantitative methodology. Examination of a freshly voided concentrated urine specimen

by microscopic techniques after centrifugal sedimentation is clearly the best and most sensitive method with careful rather than casual examination, as little as one erythrocyte/10 to 20 high power field (HPF) can be detected. The orthotolidine impregnated paper strips (Hemastix. Ames) will give a positive result in a urine specimen which contains as little as 3 to 5 erythrocyte/HPF of resuspended centrifugal urinary sediment.

Microscopic examination can mistakenly identify Candida spherules, calcium oxalate crystals, starch granules, and air bubbles as erythrocytes, under which circumstances the orthotolidine test will be negative. Candida spherules are larger than red cells and frequently may be seen to bud, especially in urine which have been allowed to stand at room temperature.

Quantification of hematuria may be done in one of two ways. When gross bleeding is present, a simple "urocrit" may be obtained in the same fashion as one determines hematocrit. This may be useful in the follow-up of hematuria occurring in patients with severe bleeding in the urinary tract. When lesser

degrees of hematuria are present (microscopic or macroscopic), timed overnight specimens of urine are necessary for quantification of hematuria (Addis counts), (Glassock, 1983).

ETIOLOGY OF HEMATURIA

The causes of hematuria fall into the four following general categories:

1. Hematologic which includes:
   a) Coagulopathy (inherited and acquired).
   b) Sickle cell hemoglobinopathy (Hb-SS, Hb-SA, and other foms).

2. Renal (glomerular and nonglomerular), which includes:
   a) Any glomerular disease (primary and secondary forms).
   b) Infectious, eg, pyelonephritis, T.B., leptospirosis, viral nephritis.
   c) Malformations (cystic and vascular).
   d) Neoplasms.
   e) Ischemic (embolism, cortical and papillary necrosis, arterial and venous thrombosis).
   f) Trauma.
   g) Hypersensitivity (vasculitis and allergic nephritis.