

BIOCHEMICAL CHANGES AFTER RENAL TRANSPLANTATION

ESSAY

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BY

FARDOSE ABDEL MONEUM ABDEL RAOUF

M. B. B. Ch.

Elk. 0756

F. A

SUPERVISED BY

Prof. Dr. **LAILA M. ABD EL-MAGD**

Professor of Clinical Pathology
Ain Shams University

أتم الفحص
45862



Dr. NASHWA AHMED ADEL EL-BADAWI

Lecturer of Clinical Pathology
Ain Shams University

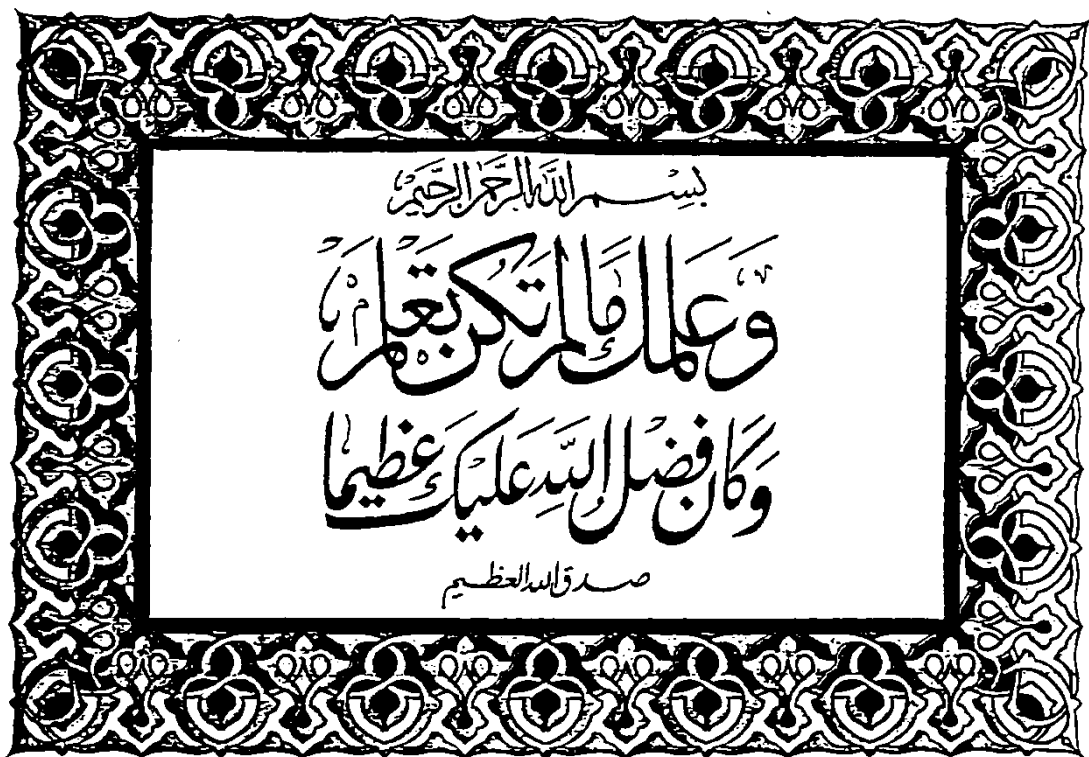
CLINICAL PATHOLOGY DEPARTMENT

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

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ARABIC SUMMARY

LIST OF ABBREVIATION

AAP	Alanine amino peptidase enzyme
ABP	Adenosine deaminidase binding protein
ADCC	Antibody dependent cell mediated cytotoxicity
AP	Alkaline phosphatase
ARE	Acute rejection episode
ATN	Acute tubular necrosis
BUN	Blood urea nitrogen
CDC	Complement dependent cytotoxicity test
CML	Cell mediated lympholysis
ELISA	Enzyme linked immunosorbant assay
FDP	Fibrin degradation products
FNAB	Fine needle aspiration biopsy
GFR	Glomerular filtration rate
HLA	Human leukocyte antigen
Ia	Immune associated antigen system
IDE	Immune suppressive dosage effect
LCT	Lymphocyte cytotoxicity test
LMC	Lymphocyte mediated cytotoxicity
MHC	Major histocompatibility complex
MLC	Mixed lymphocyte culture
NAG	N-acetyl-B-D glucosaminidase enzyme
NIH	National Institute of Health
RIA	Radio immune assay
RIEP	Rocket immune electrophoresis
SAA	Serum amyloid A protein
Th-Ts/c	T helper - T suppressor / cytotoxic
Up/Ucr	Urinary protein / urinary creatinine

INTRODUCTION AND AIM OF WORK

BIOCHEMICAL CHANGES AFTER RENAL TRANSPLANTATION

INTRODUCTION :

As the annual numbers of renal transplants is increasing dramatically, laboratory procedures included in transplantation practices are continually developing (Monaco, 1985).

Renal function tests cannot be used and the only practical aid to diagnose acute tubular necrosis of the graft has been histologic or with fine needle aspiration biopsy (Maury et al., 1986).

Grafts status is of obvious concern during the post transplantation period. The diagnosis of acute rejection following renal transplantation remains a difficult problem, particularly in the presence of oliguria. The knowledge of biochemical parameters must often be relied on for necessary testing and differential diagnosis (Jung et al., 1986).

The diagnostic significance of some urinary enzymes

as indicators of acute post transplantation rejection was found by many investigators. Tubular cell enzymes such as gamma-glutamyl transpeptidase, N- acetyl B-D-glucosaminidase, alanine aminopeptidase and alkaline phosphatase have been reported to be increased in urine in rejection (Whiting et al., 1983; Corbett et al., 1983; Bourbouze et al., 1985).

Beta-2 microglobulin (B2M) levels in the serum was found by many investigators to be ideally suited to serve as an indicator of renal transplant rejection. It, together with serum creatinine level, have been used to predict graft outcome (Fields et al., 1984; Vernon et al., 1985).

Recently, some investigators showed that acute tubular acute renal allograft rejection induce a dramatic increase in the serum amyloid A protein (SAA) concentrations and demonstrated the usefulness of (SAA) measurements in the diagnosis of rejection (Maury, et al., 1986).

AIM OF ESSAY

A comprehensive review of the use of biochemical parameters and their changes in the post transplantation monitoring of renal status is appropriately contained in this essay .

REVIEW OF LITERATURE

RENAL TRANSPLANTATION

The annual number of renal transplantation is increasing dramatically and for many persons, renal transplant is considered the preferred therapy. There are many types of renal diseases that are predisposing conditions for renal transplantation, these include glomerulonephritis, pyelonephritis, interstitial nephritis, multisystem diseases such as systemic lupus erythematosus and cystic kidney diseases (Monaco, 1985).

Transplantation practices, including laboratory procedures are continually developing (Karr, 1989).

Laboratory analysis plays a significant role in determining the patient's renal, cardiovascular, gastrointestinal, hepatic, haematological and immunological status. The need for any special pretransplantation therapy such as blood transfusion, to treat anemia or antibiotics for infection may be identified as well (Solinger, 1985).

PATIENT SELECTION FOR RENAL TRANSPLANTATION :

In the assessment of each patient as a transplant candidate, there is a number of obvious considerations that must be taken into account.

Absolute contraindications :

In some cases, concomitant medical problems can preclude transplantation. For example, active infection or malignancy are generally contraindications because these conditions can be exacerbated by the immunosuppression included by anti-rejection therapy (Rose and Black, 1988). However, transplantation can usually be safely performed if the patient has been tumour free for at least one to two years (Matas et al., 1975).

Informed patient refusal is also considered as an absolute contraindication as some patients will, for religious or emotional reasons, temporarily or permanently decide against this opinion. Other patients, because of psychiatric disease or mental incapacity, will be unable to comply with the requirements for care necessary to allow a reasonable chance for success (Birtch, 1988).

Relative contraindications :

Patients over sixty-five years are rarely transplanted because of the cumulative effect of aging on operative risk, poor tolerance of immunosuppression and its complications. The occurrence of denovo malignancy and the high incidence of vascular diseases. However, even older patients may be transplanted if they have a strong desire to undergo this procedure and are otherwise healthy, or if they have been doing poorly on dialysis (Lee and Terasaki, 1985).

Other relative contraindications include lower urinary tract disease, chronic heart failure, aortic-iliac disease, chronic pulmonary disease and renal disease with high recurrence rate. These contraindications require special evaluation pretransplantation. They are considered by most transplant centres as having significantly increased risk (Bitch, 1988).

Significant risk factors :

1. Age :

A successful transplantation had been reported in neonates (Campbell et al., 1984). But those recipients

younger than five years have had inferior chances of graft survival due to an increase in the technical vascular problems donor selection and rejection (Lee and Terasaki, 1985).

2. Systemic disease :

These include :

a. Diabetes :

Diabetic patients have increased risk complications, poor wound healing, and decreased resistance to infection that is accentuated by immunosuppression. Also their care is complicated by the presence of symptoms and altered physiology caused by neuropathy, retinopathy, gastroparesis and neurogenic bladder dysfunction (Birtch, 1988).

Although there has been considerable improvement in patient and graft survival in diabetic patients. They continue to have a success rate inferior to that achieved in non diabetics (Cats and Galton, 1985). Transplantation is considered by most programs to be the optimal therapy for young diabetic patients (Parfrey et al., 1985a).

b. Amyloidosis :

Patients with renal failure secondary to amyloid deposition have had a higher average posttransplantation mortality rate. Despite that, transplantation for patients with renal amyloidosis is appropriate in some cases (Jacobs et al., 1982).

c. Systemic lupus erythematosus (SLE) :

It is not considered as a contraindication for renal transplantation. Transplantation is withheld until the condition is clinically quiescent and anti-DNA titres are absent after discontinuance of steroid therapy; despite this, reactivation of systemic symptoms and rarely renal recurrence have been reported (Amend et al., 1981).

d. Scleroderma :

Although transplantation experience is limited in this multi-system disease, Paul et al. (1984) suggested that the mortality and success rate are acceptable.