EVALUATION OF PREOPERATIVE INVESTIGATIONS IN ELECTIVE SURGERY

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By
Mohamed Hamdy Abd-El Mageed
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Supervised by

PROF. DR. HUSSEIN ABD-EL ALEEM BOSHNAK
Professor of General Surgery
Ain Shams University

DR. WALEED ABD-EL GABBAR
Lecturer of General Surgery
Ain Shams University

Faculty of Medicine
Ain Shams University
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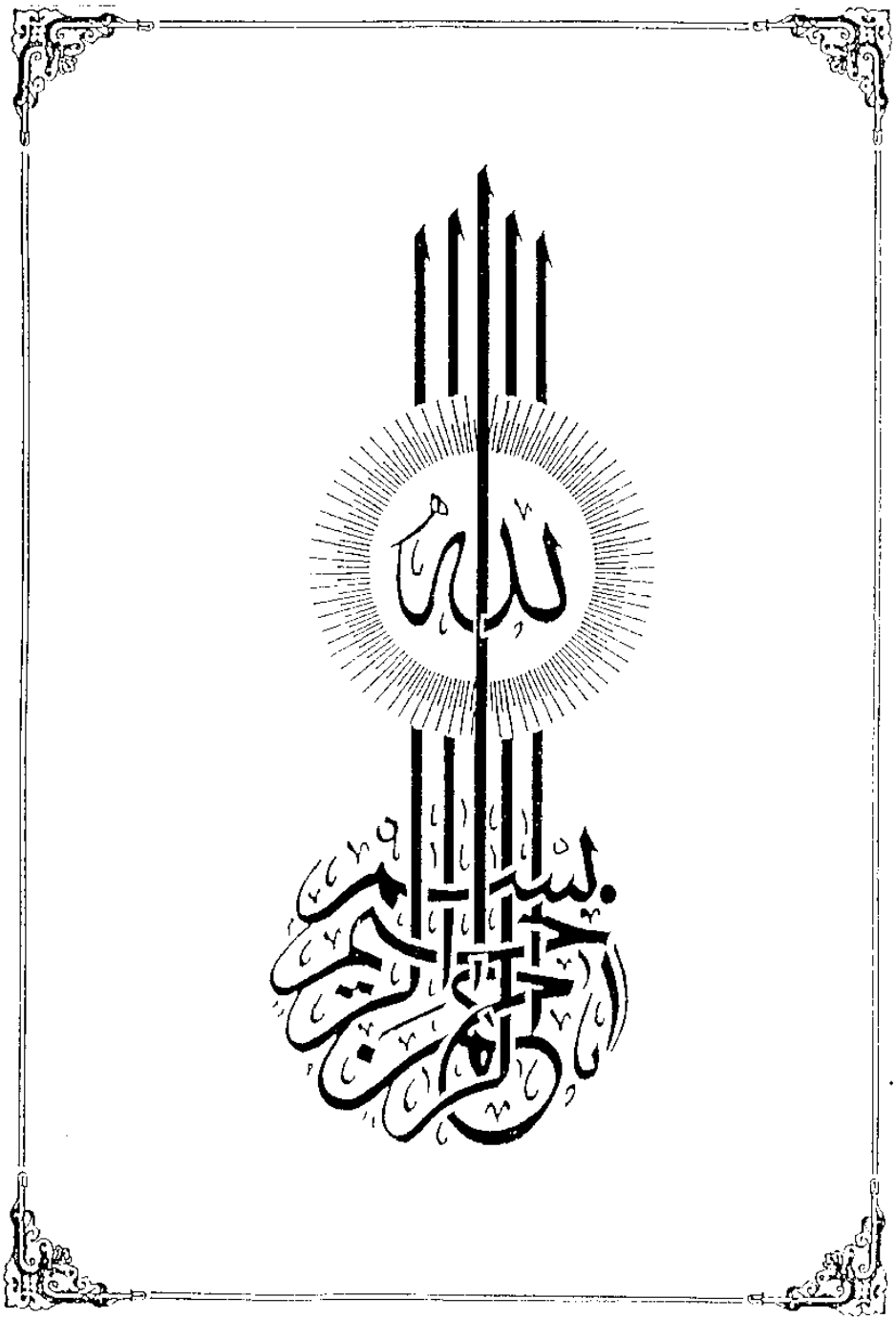
بسم الله الرحمن الرحيم

وَأَنْزَلَ اللَّهُ عَلَيْكَ الْكِتَابَ وَالْحِكْمَةَ وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا

صدق الله العظيم

(سورة النساء الآية ١١٣)



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LIST OF ABBREVIATION

AF	Atrial fibrillation
ALP	Alkaline phophatase
ALT	Alanin transaminase
ANF	Antinuclear factor
APT	Glutamate, pyruvate transaminase
ASA	American society of anesthesiology's
AST	Aspartate transaminase
BUN	Blood urea nitrogen
CAVHD	Continuous arteriovenous heamodialysis
COAD	Chronic obstructive airway disease
CRF	Chronic renal failure
FEV	Forced expiratory volume in one second
GFR	Glomerular filtration rate
IDDM	Insulin dependant diabetes millets
IMV	Intermittent mandatory ventilation
INR	International normalize ratio
IPP	Intermittent positive pressure ventilation
MI	Myocardial infarction
NIDDM	Non insulin dependant diabetes mellitus
POSSUM	Physiological and operative severity score for the enumeration of mortality and morbidity
TUR	Transurethral resection

Evaluation of Preoperative Investigations in Elective Surgery

Introduction:

Preoperative investigations have two aims, The first is to reach the diagnosis, and the second is to evaluate the patient and his fitness for surgery. Many patients undergoing elective surgery receive a battery of preoperating tests despite the relatively law yield of such testing program (Turnbull and Buck, 1987). The need for preoperative laboratory evaluation of healthy elective surgical patient is even less evident (Wyatt et al., 1989).

Although there is no published evidence to support the use of preoperative testing, its use is widespread in healthy elective surgical patients, even though it is expensive and its effectiveness has yet to be defined (Robert et al., 1992).

In light of increasing demands to reduce the cost of health care, one has to analyze the usefullness of preoperative testing in elective surgical patients.

Robert et al (1992) concluded that the preoperative testing process should be done on a selective basis. Several groups have protocols that

select which tests to be performed based on the results of a patient questionnaire and physical examination (Kapllan et al., 1985 & Wyatt et al., 1989, Mckees Scatt 1987 & Blery et al., 1986). This selective approach has considerably reduced the number of unnecessary testes and has reduced costs without increasing morbidity (Robert et al., 1992).

The preoperative assessment is mainly the job of the anaesthetist, but in Egypt the surgeon is the main contact person with patients during the preoperative, operative and post-operative period more than the anaesthetist.

The aim of this study is to evaluate the value of preoperative investigations in elective surgery and to find the suitable selection criteria to choose the proper preoperative investigation.

Preoperative Assessment

The presence of risk factors increases both morbidity and morality. Deaths associated with anaesthesia and surgery have been described as "anaesthetic death" and are usually due to the presence of high risk factors rather than anaesthetic fault. Operative morality includes all deaths occurring within 30 postoperative days (even if the patient was discharged) (Leigh, 1988). These deaths provide useful epidemiological information on risk factors. In 1961, anaesthetic deaths were 21 per 100.000 operations in England and Wales, falling to 4 per 100.000 operations in 1973, despite the rise in in patient operations from 1.6 million in 1961 to 2.5 million in 1973. In 1990, anaesthetic deaths were around 2.5 per 100.000 operations performed at a rate of 3 million per annum. Inadequate preparation of the patient may be a major factor to primary anaesthetic causes of preoperative morality. The choice of anaesthetic procedure is influenced not only by requirements for surgical access, but also by preexisting risk factors in the patient (Leigh, 1988).

The influence of risk factors depends whether the planned surgery is of major or minor importance. Therefore, a facelift surgery in a patient with hypertension, ischaemic heart disease and history of multiple myocardial infarction is deemed unrealistic, but when such a patient is presenting with intestinal obstruction, that person must undergo emergency

surgery. Subumbilical or perineal surgery may be performed under epidural or spinal anaesthesia. TUR (tranurethral resection) of prostate in cardiovascular or respiratory crippled patients can be carried out under spinal anaesthesia using bupivacaine. However, Leigh in 1988 stated that no high risk patient need to suffer any more than a temporary postponement of a necessary surgical procedure in order to stabilize and improve their fitness for surgery (Leigh, 1988).

Requested investigations must have an impact on the patient's management. Therefore, there is no place for routine preoperative investigations, as they are useless and costly. Hemoglobin concentration is required for major surgery only, for patients with history of anemia or blood loss, all females, and males over 50 years of age. Urea and electrolyte concentrations are not required routinely in patients less than 50 years of age. They are required in patients with history of diarrhea/vomiting, in metabolic (diabetes, mellitus and nutritional disorders) and endocrine diseases (renal /hepatic), and in patients receiving; diuretics, digoxin, anti-hypertensives, steroids, or hypoglycemic agents. In bowel preparation in colorectal surgery, patients may be slightly dehydrated and require electrolytes monitoring. Liver function tests are required in alcoholic patients, those with hepatic disease, and metabolic or nutritional disorders. Blood sugar measurement is required in patients receiving

steroids, and in patients with diabetes mellitus, or patients with vascular disease (Leigh, 1988).

There is no place for routine preoperative chest X-ray, it is indicated in patients with history of respiratory or cardiac disease, in suspected metastasis from carcinoma, prior to thoracic surgery, and in those with history of tuberculosis or coming from endemic areas of tuberculosis. Chest X-rays of course is important in goiter with thoracic extension. Cervical X-ray is important in patients with rheumatoid arthritis and goiter to overcome any difficulty in tracheal intubation (Leigh, 1988).

ECG is indicated in all patients above 50 years of age, and in patients with history or symptomatology of cardiovascular disease such as ischaemic heart disease or hypertension (Leigh, 1988).

HIGH-RISK FACTORS IN SURGICAL PATIENTS

Preoperative assessment of risk includes two criteria:

1.Is the patient fit for anesthesia?

2.Are the anticipated benefits of surgery greater than anaesthetic and surgical risks produced by concurrent medical disease?

If the medical condition can improve, surgery should be postponed and appropriate therapy instituted, e.g. pulmonary disease, hypertension, cardiac failure, chronic bronchitis and renal disease (AL-Fallouji, 1998).

Operative risk can be defined by the American Society of Anesthesiology's (ASA) scoring system of physical status:

American Society of Anaesthesiology Classification of Physical Status

Class 1

The patient has no organic, physiological, biochemical, or psychiatric disturbance. The pathological process for which the operation is to be performed is localized and does not entail systematic disturbance.

Examples:

- A fit patient with inguinal hernia;
- Fibroid uterus in an, otherwise, healthy woman.

Class 2

Mild to moderate systematic disturbance caused either by the condition to be treated surgically or by other pathophysiological processes.

Examples:

- Non or only slightly limiting organic heart disease
- Mild diabetes
- Essential hypertension
- Anemia

Some might choose to list the extremes of age here, either the neonate or the octogenarian, even though no systemic disease is present. Extreme obesity and chronic bronchitis may be included in this category.

Class 3

Severe systematic disturbance or disease from whatever cause, even though it may not be possible to define the degree of disability with finality.

Examples:

- Severely limiting organic heart disease
- Severe diabetes with vascular complications
- Moderate to severe degrees of pulmonary insufficiency
- Angina pectoris or healed myocardial infarction