RADIOLOGY AND IMAGING OF OBSTRUCTIVE UROPATHY

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SUBMITTED IN PARTIAL FULFILMENT FOR THE MASTER DEGREE OF RADIO-DIAGNOSIS

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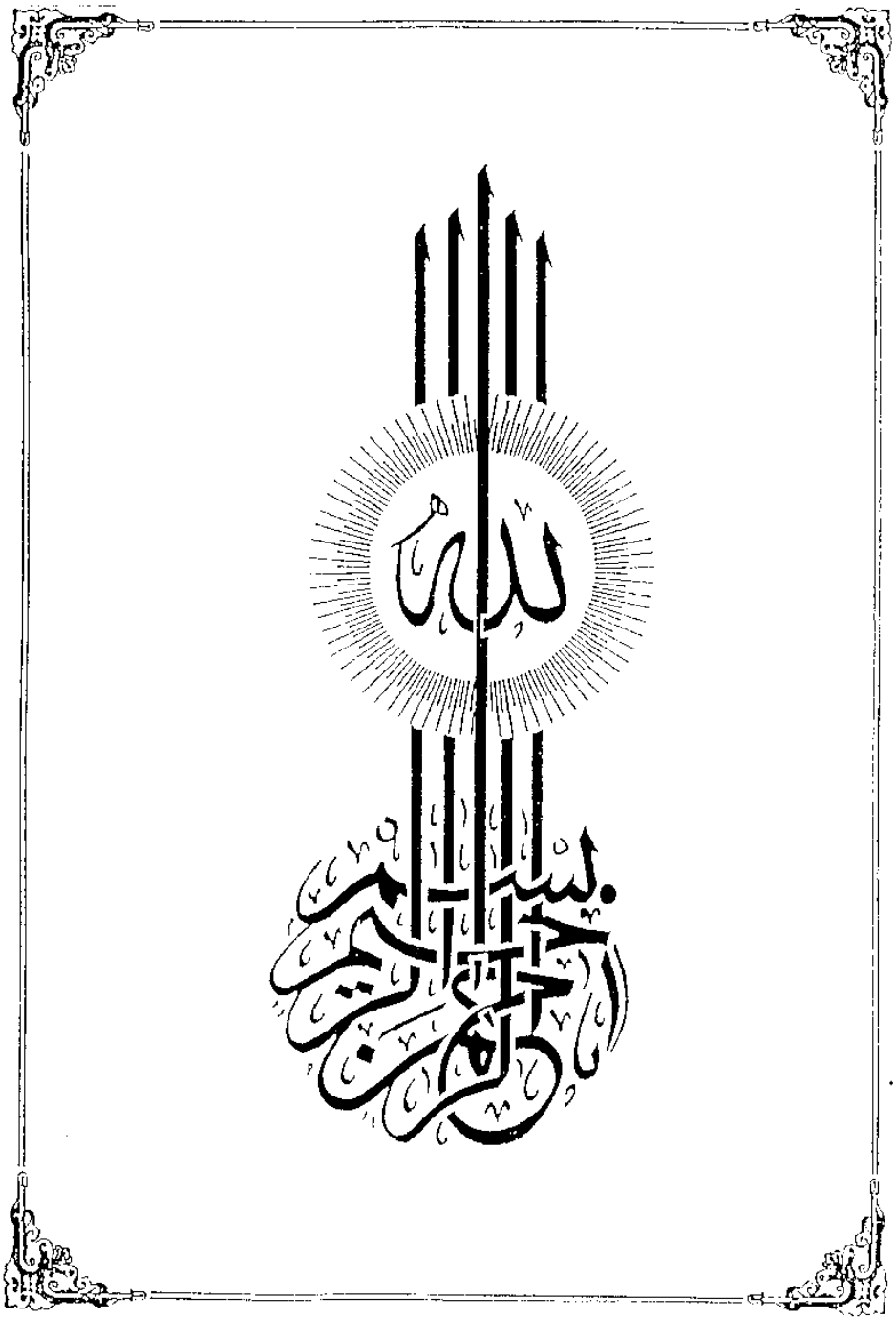

A C K N O W L E D G M E N T

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Urinary tract obstruction constitutes a high incidence in both urologic, and radiologic practice, especially in Egypt as Bilharzial infestation, urinary calculi Tops the list of aetiological causes of obstructive uropathy.

The study of obstructive uropathy is thus one of the main duties of the radiological department. Therefore finding a scheme for carrying on the proper investigations of obstructive uropathy cases,is an important object of this work.

The aim of this work is to enlight the role of different radiological and imaging modalities in the diagnosis of obstructive uropathy.

ANATOMY

OF URINARY TRACT

Anatomy of Urinary Tract:

The urinary tract consists of the following structures, the kidneys (one on each side of the vertebral column), the ureters, the urinary bladder and the urethra. (Meschan, 1975).

The Kidney:

The kidneys are paired, retroperitoneal, bean shaped organs, lying on each side of the vertebral column. Usually, the right kidney is slightly lower than the left due to the presence of the liver(Davies, 1967).

The upper pole is approximately 4 cm. closer to the midline than the lower pole. Each kidney is about 12 cm. in length, 6 cm. in breadth and 3 cm. in thickness. Their upper poles are at the level of the twelfth thoracic vertebra and their lower poles at the level of third lumbar vertebra. As regards the shape, the kidneys are normally bean shaped . (Meschan, 1975).

Foetal lobulation, however is frequently encountered in children. Additionally, lobulation may indicate partial or complete duplication of one kidney that may be without special pathological significance.

The surface of the kidney is invested by a thin strong fibrous capsule. External to it is a considerable quantity of fatty tissue known as the adipose capsule or Gerota's capsule, this capsule, permits identification of the kidney on plain radiographs since it is more radiolucent than the surrounding muscular structures. Also inflammations or neoplasms may invade this fatty envelope and impair good detail. (Meschan,1975).

The Relationship of the Kidney to other Retroperitoneal structures:

Posteriorly, the kidney lies on a muscle bed composed of the diaphragm, the psoas major, quadratus lumborum and transversus abdominis muscles.The diaphragm separates the upper part of the kidney from the pleura and the twelfth rib. (Diagram 1) . (Davies, 1967).

Anteriorly, the right kidney has the following relationships: the suprarenal gland overlaps its upper end, especially medially and the duodenum overlaps it along its hilus. The hepatic flexure of the colon covers the lower end of the kidney. A loop of jejunum lies between the colon and duodenum.The right

lobe of the liver tends to overlie the right kidney and other structures named (Diagram 2) (Davies,1967).

The left kidney, anteriorly, has the following relationships: the suprarenal gland caps its upper medial portion, and the spleen borders upon its upper lateral aspect. The body of the pancreas with the splenic vessels lies across the kidney at its mid-section. (Last, 1973).

The left half of the transverse colon crosses the kidney below the pancreas, and the descending colon overlaps its lower part laterally. The area above the pancreatic region is related to the stomach. (Canningham, 1968).

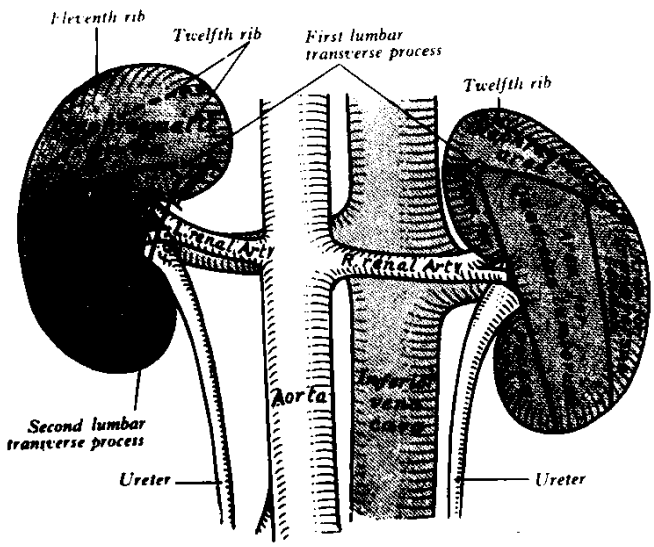

Diagram 1: The posterior surface of the kidneys showing areas of relation to the posterior abdominal wall.(Davies, 1967).

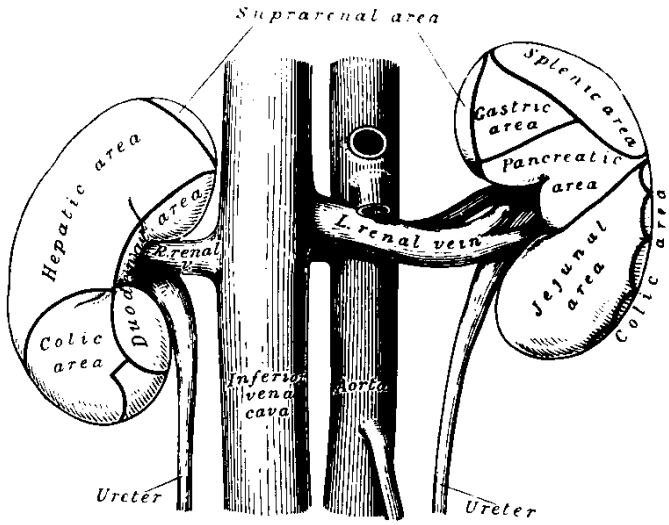

Diagram 2: The anterior surface of the kidneys, showing the areas related to neighbouring viscera. (Davies, 1967).

The stomach, the transverse colon and the jejunum are all separated by the peritoneum, and although the spleen is also separated by peritoneum it is attached at one point by the lienorenal ligament. (Davies, 1967).