MRI VERSUS ULTRASONOGRAPHY IN THE EVALUATION OF UTERINE TUMOURS

ESSAY

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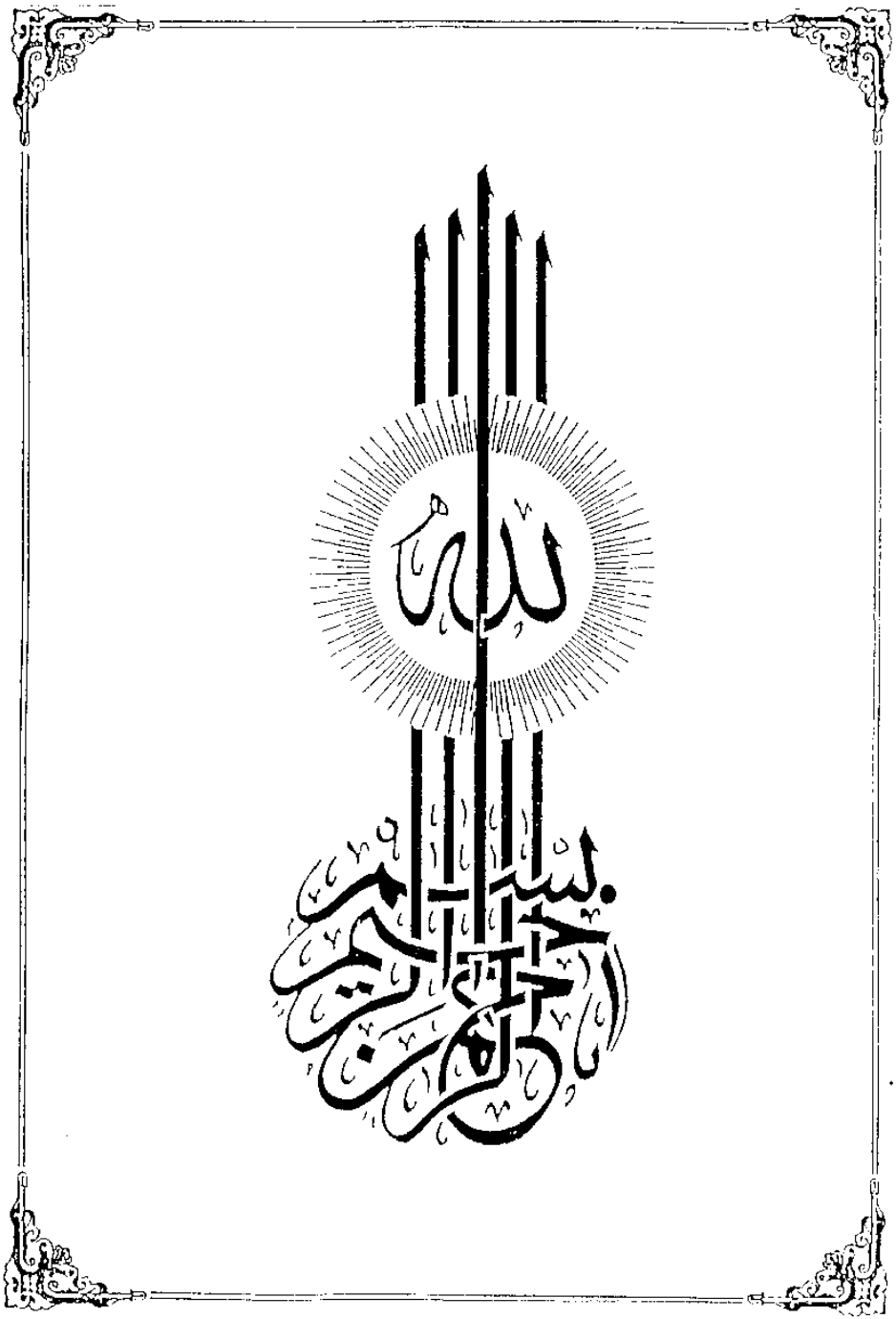

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The uterus is considered as the most common site of pelvic tumours accounting for 10% of cancers diagnosed in females.

Uterine leiomyoma is a common benign tumour of the uterus found in up to 40% of women over 35 years of age. Endometrial carcinoma is the most common invasive carcinoma of the female genital system and considered as the fourth most common female cancer. Invasive carinoma of the uterine cervix is the most common malignancy of the reproductive tract in women under the age of 50 years and considered as the third most common gynaecologic malignancy, also it accounts for 6% of malignancies in women and its incidence is about half that of carcinoma of the endometrium.

The aim of this work is to find out the role of MRI and ultrasonography in evaluation and diagnosis of uterine tumours.

ANATOMY OF THE UTERUS
(SONOGRAPHIC AND MRI)

ANATOMY OF THE UTERUS

BASIC ANATOMY:

The uterus is a thick walled hollow muscular organ located in the middle of the true pelvis lying between the bladder and rectum (Fig 1) .

Viewed from the front the cavity has a triangular shape. It communicates with the peritoneal cavity via the fallopian tubes above and with the exterior via the vaginal tube below.

The average uterus of a nulliparous women measures 9 cm. in length, 6 cm in width at its widest part and 4 cm from before backwards. The wall thickness is 1 to 2 cm, all these dimensions are increased by about 1.5 cm in multiparous.

The uterus is made up of a body or corpus, an isthmus and a cervix (Fig.2). The body is further divided into the fundus and the curnu.

The isthmus is a constricted annular area 0.5 cm wide which lies between the corpus and cervix. The

constriction at the upper end of the isthmus is called the anatomical internal os, and the line at the lower end of the isthmus where the endometrium changes into columnar cervical epithelium is termed the histological internal os (Jones, 1982).

The cervix uteri, about 2.5 cm in length is the narrower cylindrical segment of the uterus, it is continous above with the inferior end of the corpus at the constricted isthmus, below its tapering extremity projects into the upper end of the vagina, the cervix is thus divided by its relation to the surrounding vaginal wall into two segments, an upper supravaginal portion above the ring of attachment, and a lower free segment or vaginal portion which projects into the vault of the vagina (Philipp et al., 1986).

The endocervical canal establishes continuity of the uterine cavity with the vagina and measures about 3 cm, it is spindle shaped, flattend antroposteriorly with its maximum diameter of 7 mm. being at its mid point. There is a longitudinal ridge on both the anterior and posterior walls from which small oblique columns, the palmate folds arise giving a branched tree like

appearance the arbor vitae.

These folds are not opposed, but fit between each other to enhance the closure of the canal (Philipp et al., 1986).

POSITIONS OF THE UTERUS :

The fundus of the uterus is directed forward, as a consequence, the surface which might be regarded as anterior is actually brought downward to rest upon the bladder, a position described as one of anteversion, moreover, the organ is bent forward ~~as one of anteversion more over the organ is bent forward~~ upon itself being concave on its vesical or anterior surface into a position of anteflexion . The uterus is anteverted in about 80% of women. It is in mid position, retrodisplaced or retroflexed in the other 20% (Mc Vay, 1984).

BLOOD SUPPLY OF THE UTERUS

The uterus is supplied by the uterine arteries which arise from the internal iliac artery. Each vessel runs forwards and inwards in the base of the broad ligament and crosses the ureter above it and at right angles to it (water under the bridge), 1 cm lateral to the supravaginal cervix. It gives off a descending branch

which anastomoses with the ascending branches of the vaginal artery, and which supplies the lower cervix, and a circular branch to supply the upper cervix. The main trunk changes direction and passes upwards, coiled and tortuous, between the layers of the broad ligament adjacent to the lateral uterine wall, and supplies branches to the myometrium at intervals. It ends by anastomosing with the ovarian artery (Fig 3) Each branch supplying the uterus divides in the outer muscular layer to send anterior and posterior branchs to the myometrium, and to anastomose with those from the apposite side. These arteries give off branches at right angles which penetrate and supply the myometrium, and entering the endometrium from the basal arteries.

The veins of the uterus accompany the uterine artery and form pampiniform plexuses of great complexity, particularly in the parametrium where they communicate with the veins of the bladder. The paminiform plexuses drain into the uterine vein and the ovarian vein and has communications with the vertebral plexuses of veins (Jones, 1982).

LYMPHATIC DRAINAGE OF THE UTERUS

The lymphatic drainage of the uterus consists of three communicating networks: the deepest network lies in the endometrium, the second lies in the substance of the myometrium, and the superficial network is subperitoneal. The networks form collecting trunks, which pass from the corpus between the layers of the broad ligament along with the ovarian lymphatics. They then pass through the infundibulopelvic fold and ascend on the posterior abdominal wall to join the nodes of the para-aortic group. A few chanels pass along the round muscle to the superficial femoral nodes. The lowest two trunks communicate with the collecting trunks from the cervix, which pass through the base of the broad ligament to an inconstant node lateral to the ureter (the parametrial node) and to the nodes along the internal iliac arteries (The internal iliac or hypogastric nodes), and to the obturator nodes anteriorly. A few channels pass backwards along the uterosacral ligaments to the sacral nodes (Fig. 4) (Jones, 1982).

NERVE SUPPLY OF THE UTERUS

The autonomic supply is directly from the ovarian and hypogastric plexuses, sympathetic preganglionic