The Role of The Modern Imaging Modalities in The Evaluation of Ovarian Carcinoma

Essay

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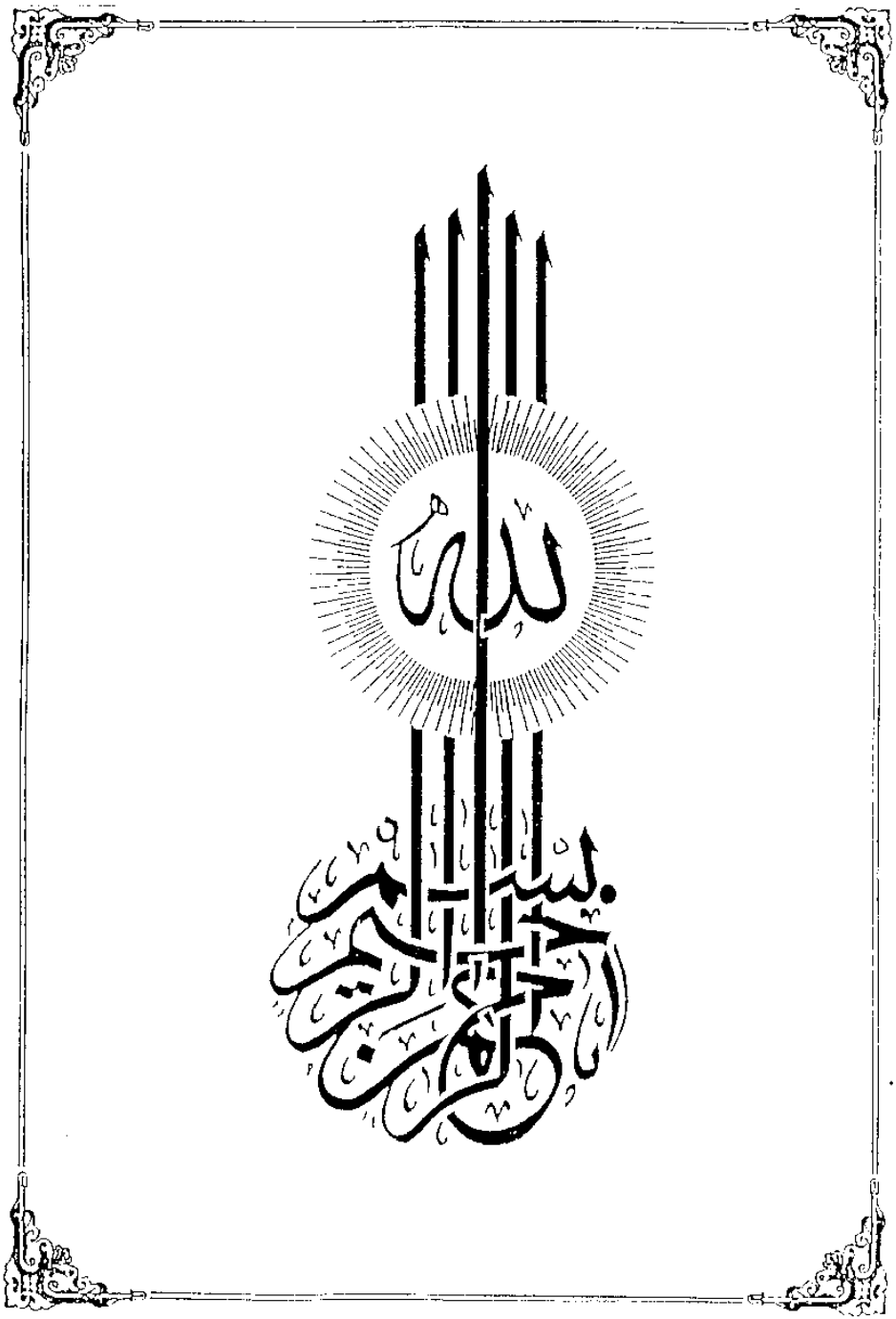
بسم الله الرحمن الرحيم

﴿ قالوا سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم ﴾

صدق الله العظيم



Acknowledgment

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Introduction:

Ovarian carcinoma is the 3rd most common gynaecologic malignancy (ranks below endometrial and cervical carcinoma). Yet mortality results from this disease is higher than that from other genital tract neoplasms (the 4th leading cause of cancer deaths among women). The poor prognosis of ovarian carcinoma (5 years survival rate 22%) is greatly related to its late diagnosis, if it is detected and treated in its early phase the 5 years survival rate may reach 85-90%). Modern imaging procedures have helped to a great extent in the detection and accurate evaluation of ovarian carcinoma. Ultrasonography, C.T and M.R have a complementary role of each other and they are useful in pre operative staging of ovarian carcinoma and may alter the surgical approach if the extent of the disease is clearly demonstrated.

The aim of this work:

Is to illustrate the role of modern imaging procedures in the accurate detection and evaluation of ovarian carcinoma which enables proper management and hence better prognosis.

ANATOMY OF THE OVARY

BASIC ANATOMY OF THE OVARIES

The two ovaries are mainly solid ovoid structure. They are greish-pink colour and each weighs 4-8 gm. The right tending to be larger than the left (Jeffcoat, 1982). Its surface is smooth but there-after, the surface is distorted by cicatrization which follows degeneration of successive corpora lutea (Gray's, 1973). During menstrual life, their average dimensions are 2.5-5 cm long, 1.5-3 cm wide and 0.6-2. cm thick. (Berman, 1991). The position of the ovary is subject to a wide range of variation in women who have born children because it is displaced in the first pregnancy and never returns again to its original location. It is also variably mobile and may change its position to some degree according to the state of the surrounding organs such as the intestines (Gray, 1973).

The ovary occupies a depression called the ovarian fossa on the lateral pelvic wall in the angle between the internal and external iliac vessels on the obturator nerve. Pain in the ovary often referred along the cutaneous distribution of this nerve (The inner side of the thigh, down to the knee). (Last, 1978). This fossa is bounded anteriorly by the obliterated umblical artery, posteriorly by the ureter and internal iliac artery (Gray, 1973). The ovaries are somewhat obliquely oriented so that its upper (uterine) pole medial and its lower (tubal) pole lateral (Last, 1978). They have relatively lateral and medial surfaces, mesovarian and free borders (Fig. 1). Their long axis is relatively superoinferiorly oriented and parallels the course of the ureters and internal iliac vessels (Friedman et al, 1991).

The tubal pole is intimately related to the fimbrial end of the uterine tube to which it is commonly attached by one of the fimbria.

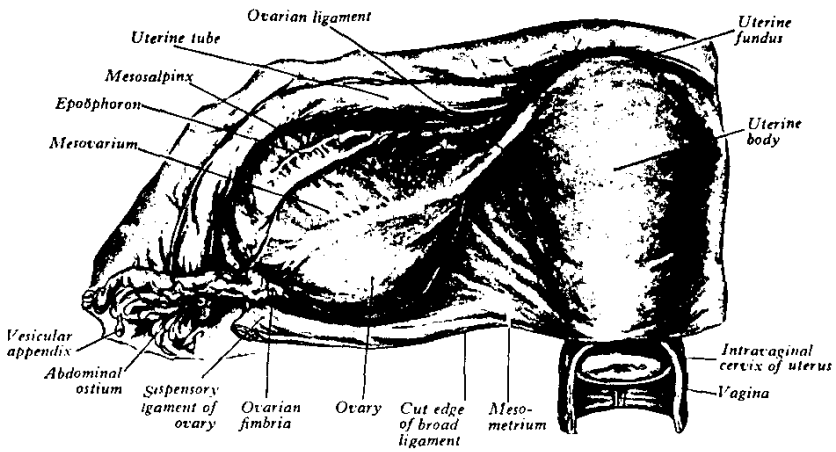

Fig. (1) : Posterosuperior aspect of the uterus and the left broad ligament. The ligament has been spread out and the ovary is displaced downwords. (Gray's, 1973).

It is attached to the lateral pelvic wall by the suspensory ligament of the ovary (infundibulopelvic ligament), a fold of peritoneum which contains the ovarian vessels, nerves, and passes superiorly over the external iliac vessels to become continuous with the peritoneum on the psoas major, posterior to the caecum or descending colon (Gray, 73). The uterine pole is usually narrower than the tubal pole. It is attached to the lateral angle of the uterus posteroinferior to the uterine tube by the ovarian ligament, a mass of smooth muscles and fibrous tissue lying between the two layers of the broad ligament. It continues on as the round ligament, this continuous ligament is the remnant of the gubrnaculum (Last, 1978), The lateral surface of the ovary is in contact with the parietal peritoneum which lines the ovarian fossa. It separates the ovary from the extraperitoneal tissue and the obturator vessels and nerves (Gray, 1973). The medial surface is to a large extent covered by the uterine tube and is usually related to loops of bowel within the rectouterine pouch (Hollinshead, 1976).

The mesovarian border is straight and is directed towards the obliterated umblical artery. It is attached to the back of the broad ligament by a short fold named the mesovarium, between the two layers of this fold, the blood vessels and nerves pass to the hilus of the ovary. The free border is convex and is directed towards the ureter (Gray, 1973).

The Arterial Blood Supply of The Ovary :

The ovary is supplied by the ovarian artery, a branch of the abdominal aorta just below the renal artery at L_2 vertebral level. The vessel runs down behind the peritoneum of the infracolic compartement

and the colic vessels crossing the ureter obliquely on the psoas muscle.

Close to the level of branching of the common iliac vessel, it crosses the pelvic brim and enters the infundibulopelvic ligament at the lateral extremity of the broad ligament.

It gives off a branch to the uterine tube (Fig. 2A) which runs medially between the layers of the broad ligment and anastmoses with the uterine artery and it ends by entering the ovary (Last,1978).

The mesovarium also transmits to the ovary the ovarian branch of the uterine artery which anastmoses with the ovarian artery.

During pregnancy, the artery becomes much enlarged and through its anastmoses with ovarian branch of the uterine artery helps supply the uterus (Hollinshead,1976).

The anastmoses is so free that fluid injected into the uterine artery alone passes easily into the vessels within the substance of the ovary (Fig. 2B) (Jeffcoate,1982).

THE VENOUS DRAINAGE OF THE OVARY :

The ovarian veins form a plexus in the mesovarium and the infundibulopelvic fold called the pampiniform plexus.

The plexus drains into a pair of ovarian veins which accompany the ovarian artery.

They usually combine as a single trunk befor their termination .

That on the right joins the inferior vena cava , and that on the left joins the left renal vein (Last , 1982) .

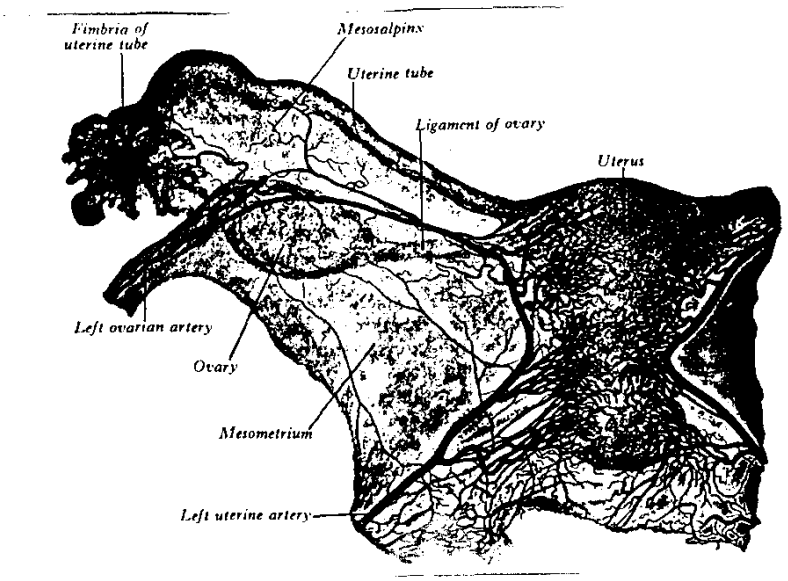

Fig. (2A) : The figure shows the distribution of the left uterine and ovarian arteries of a female aged seventeen and half years .(Jeffcoate ,1982)

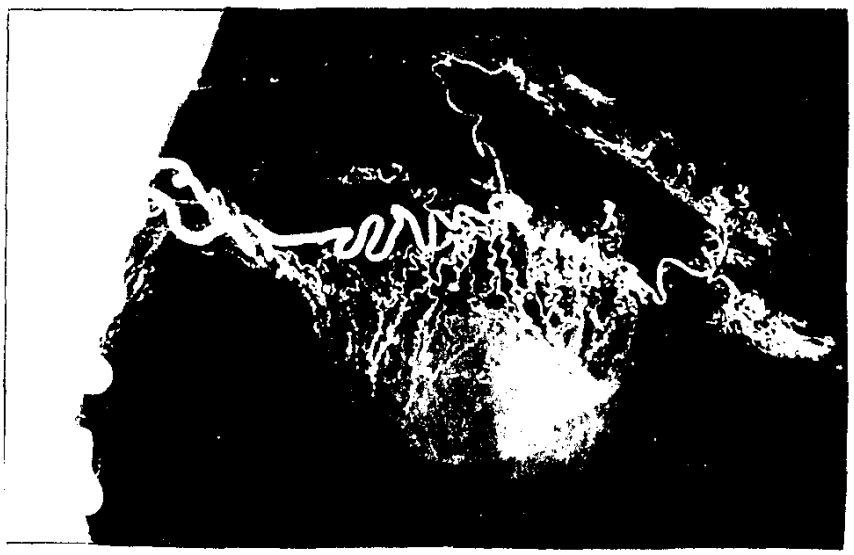

Fig. (2B) : The Blood supply to the ovary as revealed by a uterine arteriogram. The ovarian artery was n't injected but is shown filled from its connexion with the terminal part of the uterine artery. The spiral arterioles entering the ovary through the mesovarium are well shown .(Jeffcoate , 1982)