شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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Role of 18F-FDG PET/CT in assessment and prediction of progression of peritoneal metastasis from ovarian cancer

Thesis

Submitted for Partial Fulfilment of Master Degree in Radiodiagnosis

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List of Abbreviations

Abb.	Full term
^{18}FDG	^{18}F-fluorodeoxyglucose
BRCA1	Breast-Cancer susceptibility gene 1
BRCA2	Breast-Cancer susceptibility gene 2
CA-125	Cancer antigen 125
CCC	Clear cell carcinoma
CE CT	Contrast enhanced computed tomography
CTH	Chemotherapy
EC	Endometrioid carcinoma
EOC	Epithelial ovarian cancer
FIGO	International Federation of Gynecology and Obstetrics
HGSC	High-grade serous carcinoma
LGSC	Low-grade serous carcinoma
MC	Mucinous carcinoma
MRI	Magnetic Resonance Imaging
OS	Overall survival
PACS	Picture archiving and communications system
PC	Peritoneal cavity
PET	Positron emission tomography
PFS	Progression free survival
ROI	Region of interest
SPS	Subperitoneal space
SUV	Standardized uptake value
TAH+BSO	Total abdominal hysterectomy and bilateral salpingo-oopherectomy

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INTRODUCTION

Ovarian cancer is the eighth most commonly occurring cancer in women and the 18th most commonly occurring cancer overall. It is one of the most common gynecologic cancers that occurs third after cervical and uterine cancer. Ovarian cancer is the sixth malignant cause of cancer deaths in women ***(Bray et al., 2018; Khazaei et al., 2019)*.**

Epithelial ovarian cancer (EOC) is a heterogeneous disease. Nowadays, it is widely recognized that the histological subtypes constitute 5 different diseases: low-grade serous carcinoma (LGSC), high-grade serous carcinoma (HGSC), endometrioid carcinoma (EC), mucinous carcinoma (MC), and clear cell carcinoma (CCC) ***(Prat, 2012).***

Ovarian cancer can spread by intraperitoneal seeding, direct invasion or through the lymphatic and vascular circulation. Peritoneal seeding is the most common route of dissemination, and stage III disease is associated at best with a 5-year survival rate of 32–47% ***(Heintz et al., 2006).***

Cyto-reductive surgery, followed by paclitaxel therapy and platinum-based cytotoxic chemotherapy, is the mainstay of primary treatment. Despite high clinical response rates after optimal de-bulking surgery and combination chemotherapy, 50%–75% of patients still experience disease relapse. However, due to the recent emergence of alternative targeted therapies,

which are designed to manage small-volume recurrent disease, positron emission tomography (PET) combined with computed tomography (CT) may play an important role in early detection of recurrent ovarian cancer ***(Armstrong et al., 2006).***

Metastases from ovarian cancer primarily involve the peritoneum rather than parenchymal sites; thus, the presence of small-volume recurrence or metastatic deposits on the visceral surfaces poses a challenge for interpretation of CT and MRI images. In addition, after surgery, anatomic structures may appear distorted, resulting in equivocal or inaccurate imaging findings ***(Qayyum et al., 2005).***

PET/CT with fluorine-18 fluorodeoxyglucose (FDG) is increasingly being used in staging of malignant ovarian tumors as well as evaluation of the treatment efficacy. FDG-PET is useful in detecting and staging of metastatic ovarian cancers with high specificity as compared with the serum tumor marker CA-125 level ***(Sari et al., 2012).***

A recent study found that PET/CT in ovarian relapse is more accurate than other imaging methods in detecting small carcinomatosis implants ***(Perrone et al., 2019).***

Aim of the Study

To evaluate the role of 18F-Flurodeoxyglucose positron emission tomography/computed tomography in prediction of progression of peritoneal metastases after initial surgical treatment of malignant ovarian tumors.

Chapter 1

ANATOMY OF THE OVARY

Gross Anatomy

The ovaries are ovoid, almond-shaped structures that vary considerably in size depending on age, hormonal status, and the stage of the menstrual cycle ***(Erickson and Chang, 2007).***

They are almond-shaped structures ranging from 2.5-5 cm long, 1.5-3 cm thick, and 0.7-1.5 cm wide, with a weight of 3-8 gm in adult woman ***(Kleeman and Silva, 2007).***

They usually lie within the ovarian fossa along the side wall of the pelvis, each ovary is suspended in the pelvic peritoneal cavity by three anchoring structures: the mesovarium, which anchors the ovary to the posterior surface of the broad ligament; the utero-ovarian ligament (ovarian ligament), which anchors the ovary to the uterus; and the suspensory ligament, which anchors the ovary to the pelvic side wall ***(Faysal et al., 2010).***

The ovary is encapsulated by a thin whitish fibrous Capsule called the tunica albuginia ***(Erickson and Chang, 2007).***