

HUMAN CARTILAGE GLYCOPROTEIN 39" YKL-40"AS AN INDICATOR FOR LYMPH NODE AFFECTION IN PATIENTS WITH ENDOMETRIAL CARCINOMA

Helmy Helmy Abd El-Sattar Rady, Ahmed Abd Elazim Essmat,*Hebatallah Hassan Mamdouh,**Eman Saad Nassar, Mohamed Reda Mohamed Etman

Department of Obstetrics and Gynecology, *Department of Radiodiagnosis and Intervention,**Department of Clinical and Chemical Pathology, Faculty of Medicine, Alexandria University

Introduction

The most common tumor in the female genital system globally is endometrial cancer, with a global rise in incidence as well as disease-related morbidity and mortality. EC has diverse histological subtypes and molecular characteristics. In the past, EC was divided into two types: Type I is characterized by unopposed estrogen stimulation and includes more common low-grade cells with a favorable prognosis, and Type II, which is not estrogen-driven, includes less prevalent high-grade cells with a poor prognosis. Type I ECs consists of grade I or grade II endometrioid adenocarcinomas, while Type II ECs consist of serous clear cell, undifferentiated, carcinosarcomas, and grade III endometrioid adenocarcinomas. Chitinase-3 like-protein-1, also known as breast regression protein 39 (BRP-39) or YKL-40 in humans, is a common CLP found in both prokaryotes and eukaryotes. The three N-terminal amino acid residues—tyrosine (Y), lysine (K), and leucine (L)- that are present in the secreted form and have a molecular weight of 40 kDa have earned it the designation YKL-40.

Aim of the Work

The aim of this study was to compare YKL-40 as a marker for lymph node affection in patients with endometrial carcinoma to the available imagining study (Ct staging and / or MRI pelvis) and in relation to the histopathological examination of resected lymph nodes done at gyne-oncology unit at El Shatby Maternity University Hospital from January 2023 till May 2024.

Patients and Methods

After signing a written consent form to participate voluntarily, 132 female patients with endometrial carcinoma diagnosed by endometrial biopsy who were admitted to the gyne-oncology unit at El Shatby Maternity University Hospital between January 2023 and May 2024 were the subjects of a prospective cohort study. All the patients underwent either laparoscopic or traditional surgery to get the best possible surgical staging. TVUS done by the specialist at the gyne-oncology unit at El Shatby Maternity University Hospital for all of patients then patients were categorized into:
Group A: Patients with endometrial carcinoma with the available imaging study (CT staging and/or MRI) showed pelvic lymph node affection. (66 cases).
Group B:Patients with endometrial carcinoma with the available imaging study (CT staging and/or MRI) showed no pelvic lymph node affection. (66 cases).

-All patients had their pre-operative YKL-40 plasma levels measured, and a correlation between the plasma levels, the final pathology findings, and the available pre-operative radiological imaging study was conducted regarding pelvic lymph node affection in patients with endometrial carcinoma.

Inclusion criteria 1- Patients who freely participated in the trial after signing an informed consent form. 2- Patients confirmed to have endometrial carcinoma by endometrial biopsy. 3- Patients who were generally fit for surgery. 4- Operation was conducted either by conventional surgery or laparoscopy.5- Either type I or type II endometrial cancer.6- Participants may have endometrial cancer of any grade.7- Any resectable stage of endometrial carcinoma.8- Patients with endometrial carcinoma with the available preoperative imaging study (CT staging and / or MRI).

Exclusion criteria:1- Other malignancies than endometrial carcinoma. 2-Previous radiotherapy or chemotherapy 3-Patients unfit for surgery.4-Obese patient (BMI >35).5- Participants with long-term conditions that can impact YKL-40 serum levels, such as rheumatoid arthritis, liver fibrosis, asthma, chronic obstructive lung disease, cardiovascular disease, and uncontrolled diabetes, were not allowed to participate in the trial.

Results

Table (1):Diagnostic performance for YKL-40 to discriminate positive pathology results (n=37) from negative pathology results (n = 95)

	AUC	P	95% C.I	Cut off	Sensitivity	Specificity	PPV	NPV	accuracy
YKL-40	0.644	0.010*	0.550 – 0.737	>0.939	72.97	54.74	38.6	83.9	59.85

Table (2): Agreement (sensitivity, specificity and accuracy) for Pelvic Lymph Node Involvement [CT Finding]

	Pathology results				Sensitivity	Specificity	PPV	NPV	Accuracy
Pelvic Lymph Node Involvement	Negative (n = 91)		Positive (n = 33)						
	No.	%	No.	%					
CT Finding									
Negative	54	59.3	4	12.1	87.88	59.34	43.94	93.10	66.94
Positive	37	40.7	29	87.9					
χ^2 (p)	21.689* (<0.001*)								

Table (3): Agreement (sensitivity, specificity and accuracy) for Pelvic Lymph Node Involvement [MRI Finding]

	Pathology results				Sensitivity	Specificity	PPV	NPV	Accuracy
Pelvic Lymph Node Involvement	Negative (n = 31)		Positive (n = 24)						
	No.	%	No.	%					
MRI Finding									
Negative	22	71.0	4	16.7	83.33	70.97	68.97	84.62	76.36
Positive	9	29.0	20	83.3					
χ ² (p)	16.002* (<0.001*)								

Regarding preoperative CT staging , MRI pelvis and the level of YKL-40 and final pathological results (regarding pelvic lymph node involvement) whether (positive or negative), results showed that sensitivity of CT staging(87.88%),specificity (59.34%) and accuracy (66.94%) and the sensitivity of MRI pelvis (83.33%),specificity (70.97%) and accuracy (76.36%) and the sensitivity of YKL40 (72.97%),specificity (54.74%) and accuracy (59.85%).

Conclusion

For the diagnosis of lymph node involvement in patients with endometrial cancer, YKL-40 is a sensitive marker substitute for imaging studies. Though less precise than MRI pelvis and CT, YKL-40 is a helpful marker for diagnosing lymph node involvement in women with endometrial cancer. When it comes to diagnosing lymph node involvement in patients with endometrial cancer, pelvic MRI is more accurate than CT and YKL-40.