

ROLE OF ULTRASOUND IN ASSESSMENT OF PATHOLOGICAL LYMPH NODE IN GYNECOLOGICAL CANCERS

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Introduction

Worldwide, Gynecological malignancies are an important cause of cancer-related death. The annual estimated incidence is exceeding than 3.6 million and the mortality over 1.3 million, they represent nearly 40% of all malignancy incidence and conjointly exceed 30% of all cancer mortality in women. One of the major prognostic factors is nodal involvement in gynecological carcinomas because it is associate with poor outcome and exert influence on treatment modalities. Imaging modalities for LN evaluation in gynecologic malignancies that are the most used are CT and MRI. They are based on morphologic criteria to differentiate benign from malignant lymph node (location, number, size, shape, outline, internal architecture) and degree of uptake in dynamic sequence (contrast enhanced CT and MRI). Nevertheless, they frequently fail to notice metastatic nodes. Ultrasonography can help to differentiate between normal, reactive (immunological state but still benign) and metastatic lymph nodes.

Aim of the work

The aim of this study was to evaluate ultrasound accuracy in detection of lymph node affection in gynecologic cancer patients in comparison to the standard studies using CT or MRI and histopathology.

Patients and Methods

A prospective study was conducted over one year on 200 patients who were treated for gynecological cancers. A preoperative ultrasound examination was performed using a commercially available equipment (Mindray DC-70 X-insight) with color and power Doppler capabilities. Transvaginal examination with intracavitary probe (2.6-12.8 MHz) was performed to examine the uterus including uterine zonal anatomy: cervix, endometrium, junctional zone (endometrial-myometrial junction), myometrium, perimetrium, the adnexa and the pelvic peritoneum. Transabdominal examination was performed with a convex array probe (3-7MHz) in the evaluation the detection of inguinal and retroperitoneal lymphadenopathy. The results were then compared with radiologic findings (CT/MRI) and histopathologically confirmed lymph node status.

Results

Table 1: Relation between LN status / Pathology report and US status of LN in total sample and each sub groups (n=138)

US status of LN	LN status /Pathology report <sup>#</sup>				Sensitivity	Specificity	PPV	NPV	Accuracy
	Negative (n=115)		Positive (n=23)						
	No.	%	No.	%					
Total sample					65.22	85.22	46.88	92.45	81.88
Negative	98	85.2	8	34.8					
Positive	17	14.8	15	65.2					
c <sup>2</sup> (p)	27.372* (<0.001*)								
Ovarian	(n=4)		(n=6)						
Negative	—	—	—	—	100.0	—	60.0	—	—
Positive	4	100.0	6	100.0					
Endometrial	(n=7)		(n=7)						
Negative	—	—	—	—	100.0	—	50.0	—	—
Positive	7	100.0	7	100.0					
Cervical	(n=3)		(n=2)						
Negative	—	—	—	—	100.0	—	40.0	—	—
Positive	3	100.0	2	100.0					
Vaginal and vulvar	(n=3)		(n=1)						
Negative	—	—	—	—	100.0	—	25.0	—	—
Positive	3	100.0	1	100.0					

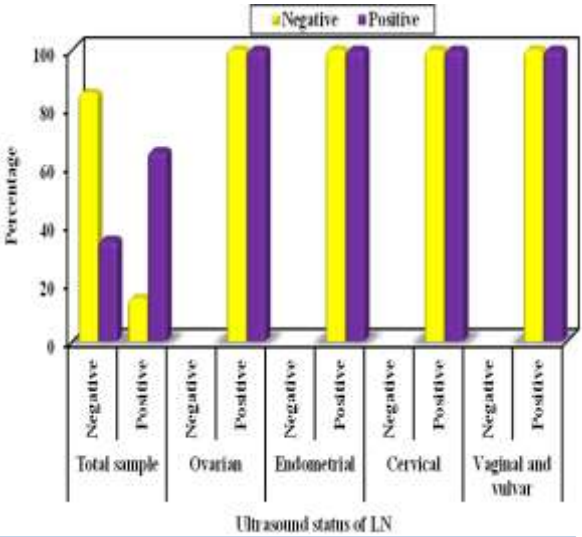


Figure 1: Relation between LN status / Pathology report and US status of LN in total sample and each subgroup

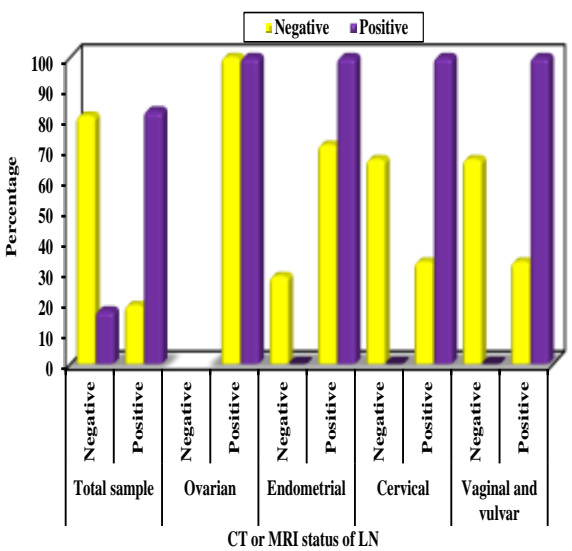


Figure 2:Relation between LN status / Pathology report and CT or MRI status of LN in total sample and each subgroup

Table 2: Relation between LN status /Pathology report and CT or MRI status of LN in total sample and each subgroup

CT or MRI status of LN	LN status /Pathology report <sup>#</sup>				Sensitivity	Specificity	PPV	NPV	Accuracy
	Negative		Positive						
	No.	%	No.	%					
Total sample	(n=115)		(n=23)						
Negative	93	80.9	4	17.4	82.61	80.87	46.34	95.88	81.16
Positive	22	19.1	19	82.6					
c <sup>2</sup> (p)	36.983* (<0.001*)								
Ovarian	(n=4)		(n=6)						
Negative	—	—	—	—	100.0	—	60.0	—	—
Positive	4	100.0	6	100.0					
Endometrial	(n=7)		(n=7)						
Negative	2	28.6	0	0.0	100.0	28.57	58.33	100.0	64.29
Positive	5	71.4	7	100.0					
c <sup>2</sup> (FEp)	2.333 (0.462)								
Cervical	(n=3)		(n=2)						
Negative	2	66.7	0	0.0	100.0	66.67	66.67	100.0	80.0
Positive	1	33.3	2	100.0					
c <sup>2</sup> (FEp)	2.222 (0.400)								
Vaginal and vulvar	(n=3)		(n=1)						
Negative	2	66.7	0	0.0	100.0	66.67	50.0	100.0	75.0
Positive	1	33.3	1	100.0					
c <sup>2</sup> (FEp)	1.333 (1.000)								

Conclusion

- Ultrasound examination can be used to assess LN metastasis in gynecologic cancer. Although it had lower sensitivity, it had high specificity and NPP and almost the same PPV than CT and MRI which are widely used. It is widely available and of low coast. Patients are not exposed to any radiation nor contrast agents.
- However, surgical LN examination is still required to determine the LN status due to the fact that a false negative diagnosis of a LN metastasis is of a bad prognosis for the patient.