Ultrasound evaluation of suspected adnexal mass

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“The phone does not ring. A silence without promises fills the air indefinitely. But I'm not in a hurry. There’s no need to rush. I'm ready. I can go anywhere.”

Haruki Murakami. Sputnik my love.

The ultrasound is the diagnostic method of choice for evaluation of adnexal masses. Its sensitivity and specificity, in experienced hands, and according to defined morphological criteria, exceeds 90%, with an area under the curve of 0,917 for the definition of malignant lesions \(^1\). The importance of predicting the risk of an adnexal mass as malignant, allows designing the most appropriate treatment for the patient and thus facilitating the care with specialists in the area of oncology gynecology. Overall survival in patients with ovarian cancer is increased by 30% if the treatment is performed by a team with experience in a specialized center, which adheres to the guidelines of the NCCN\(^2\).

In order to unify criteria and facilitate the detection of malignant ovarian tumors, the International Ovarian Tumor Analysis (IOTA) has systematized the description of the ecomorphology of the adnexal masses, designing different indices to estimate the probability that an adnexal mass is benign or malignant. In a study published in April 2016\(^1\) by Timmerman D et al, in the *American Journal of Obstetrics and Gynecology*, they performed an analysis using what the group called the Simple Rules, which serve to characterize an ovarian tumor by evaluating how they correlate with a benign or malignant lesion.

**The simple rules that characterize a benign adnexal mass are:**

- **B1:** unilocular cyst
- **B2:** solid component present but < 7 mm
- **B3:** Acoustic shadows
- **B4:** smooth multilocular tumor with larger diameter < 100 mm.
- **B5:** no blood flow.
The simple rules that characterize a malignant adnexal mass are:

- **M1**: irregular solid tumor
- **M2**: ascites
- **M3**: At least 4 papillary structures
- **M4**: irregular multilocular-solid tumor with larger diameter < 100 mm
- **M5**: very strong flow

**Ascitis**

The presence of any B, without any M, indicates that the mass is probably benign. By the contrary, the presence of any M, without B, indicates that the tumor has a high likelihood of being malignant. If there is a combination of M and B, additional studies are required, although in the analysis presented in this study, depending on the type of characteristic present there is a greater or lesser probability that it is a malignant neoplasm.

The advantage of simple rules is that they are ultrasound features easily identifiable, repeatable and allow conclusive results in 76% of cases. In the analysis of each rule, the presence of a unilocular cyst was the feature that best correlated with a benign adnexal mass, while the presence of ascites was the feature that best correlated with a malignant adnexal mass. According to the correlation of each characteristic or rule, and its presence or absence during the ultrasound evaluation, arises the following risk of malignancy classification:

1. Very low risk (0-0.2%): any M and more than two B.
2. Low risk (0.2-3%): none M and two B or none M and B1.
3. Intermediate risk (3-5%): non-M and one B (other than B1).
4. High risk (5-78%): no M or B or less M than B or equal M than B.
5. Very high risk (42-99%): more M than B.

Once an adnexal mass has been identified with high risk of a malignant disease, it is important to evaluate the extent of the disease. It should rule out the presence of abdominal carcinomatosis, in the parietal, visceral peritoneum and in the mesentery. Metastatic implants are characterized by hypoechoic lesions with neoangiogenesis. The presence of nodules at the level of the mesentery predicts a low probability of optimal cytoreduction during surgery, which must be taken into account by the surgeon and is information that reliably provides the echographic evaluation and can go unnoticed in an initial laparoscopic evaluation. The liquid interface that generates the presence of ascites greatly facilitates the visualization of the pelvic and abdominal implants, a finding that is adequately correlated with diffuse peritoneal seeding. Infiltration of the
omentum is seen as hypoechoic, vascularized nodules with irregular borders. However, as limiting those tumors very bulky can hinder a good exploration of the abdominal cavity.

It is also important to detect the presence of abdominal adenopathies, exploring the aorta, cava and iliac vessels, easily identifiable structures. Ganglia with neoplastic infiltration are evidenced as rounded hypoechoic images with peripheral vascularization and loss of fatty hilum. It is also necessary to evaluate the presence of liver metastases, which are usually rounded hypoechoic images with irregular borders. Occasionally, these lesions may present as echogenic masses.

Although preoperative evaluation of a suspicious adnexal mass requires other paraclinical studies, such as tomography or resonance, ultrasound, which is an economical and affordable method, can provide useful information in the preoperative phase.

In remote or low-resource settings, where it is not possible to use other diagnostic methods, the proper and systematic use of ultrasound for the detection of a suspicious of malignancy masses and extrapelvic extension criteria becomes an essential tool for deciding reference to a specialized center in order to improve the survival of ovarian cancer patients.

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References: