Ultrasound, macroscopic and histological features of malignant ovarian tumors

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SUMMARY

Ultrasound examination is considered to be the first line imaging method to diagnose an ovarian mass with a high degree of accuracy, discriminating between benign and malignant ovarian masses in the hands of experienced examiners.

The International Ovarian Tumor Analysis (IOTA) group provided a standardized terminology of ovarian masses¹ and suggested simple ultrasound rules that can be used to classify adnexal masses as benign or malignant.² The IOTA group has also created logistic regression models (ie, ADNEX

(Assessment of Different NEoplasias in the adneXa) model), including clinical and ultrasound information to calculate the likelihood of malignancy in adnexal masses. The IOTA ADNEX model estimates the likelihood not only of an adnexal mass being benign or malignant but also the likelihood that the mass is benign, borderline malignant, stage I primary invasive malignant, stage II–IV primary invasive malignant or a metastasis in the ovary from another primary tumor.³

Recently, a consensus meeting including European and North American professionals developed

Video 1. Ultrasound, macroscopic and histological features of malignant ovarian tumors

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a new risk model for the pre-operative assessment of adnexal masses, called O-RADS (Ovarian-Adnexal Reporting and Data System). The O-RADS ultrasound risk stratification and management system was designed to provide consistent interpretations, to decrease or eliminate ambiguity in ultrasound reports resulting in a higher probability of accuracy in assigning risk of malignancy to ovarian and other adnexal masses, and to provide a management recommendation for each risk category.⁴

Moreover, during the past 15 years authors of the IOTA group have described the typical ultrasound appearance of several different adnexal pathologies, including various histotypes of malignancy, collected in the series of “Imaging in gynecology” papers.^{5–10} Indeed, ovarian cancer includes several histological entities which can be grouped into four histological groups: epithelial tumors, germ cell tumors, stromal tumors and metastatic tumors. Each histopathological category is often characterized by some morphological typical features, as described in the textbooks of pathologists.

In the pre-operative phase, ultrasound examination can enable assessment of these macroscopic aspects, thus providing a presumptive histological diagnosis.

We present a video describing how to apply the simple ultrasound rules, the IOTA ADNEX model and the O-RADS model, and provides explanatory examples for each model.

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Contributors We present a video describing how to apply the simple ultrasound rules, the IOTA ADNEX model and the O-RADS model, and explanatory examples for each model.

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