Did you know?
Borderline Ovary Tumor
(Borderline serous cystadenoma)

Abstract

Borderline ovary tumors usually affect young women and are symptom-free. This type of tumor is different from cancer. This article will help you to understand the differences and how to distinguish borderline lesions from other types of lesions. Borderline ovarian tumors are usually diagnosed at an early stage. The main therapy for these tumors is surgery. There is a small risk of tumor recurrence.

Borderline ovarian tumors are lesions with certain abnormalities, shaped within the tissue covering the ovary. They are often discovered during an ultrasound exam or an infertility assessment, for example. Tumors of this type are not malignant and are usually treated by surgery.

About 15 out of every 100 (15%) ovarian tumors are borderline tumors. They are also called "tumors with low malignant potential". Borderline tumors usually affect women between 20 and 40 years old. There are two main types of borderline ovarian tumors: serous and mucinous. Serous borderline ovarian tumors are the most common. They represent about 65% of cases of borderline ovarian tumors.

Borderline ovarian tumors are different from cancer (Figure 1) because they do not grow in ovarian support tissue (the stroma). They tend to grow slowly and more controlled than cancer cells.

Occasionally, some abnormal cells come off the tumor and settle elsewhere in the body, usually in the abdomen. Very rarely, these cells begin to develop in the underlying tissue (peritoneal carcinomatosis).

Complications

- Adnexal torsion (ovarian torsion)
- Intra or extra cystic haemorrhage

Possible treatments

- Surgery is usually the only therapy
- Ovaries and fallopian tubes ablation
- Removal of the uterus, including the cervix
- Laparotomy (incision through the abdominal wall to gain access into the abdominal cavity) if the lesion is characterized as "malignant tumor"
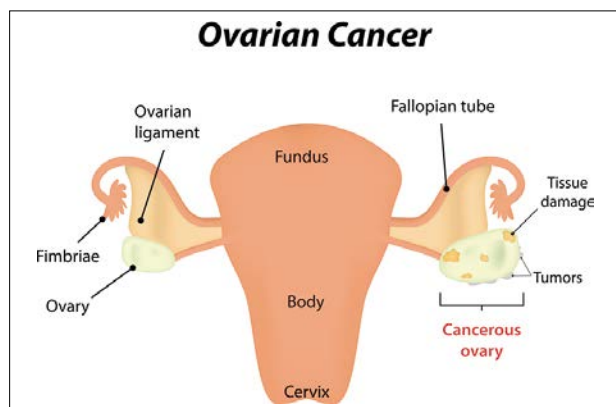

Figure 1

In Olea Sphere®

Olea Vision® thanks to the combined visualization of the three T2 planes, the T1 with and without fat saturation, allows to confirm that the lesion depends on the ovary and that we do not find the presence of fat (lesion type dermoid) or blood (Figure 2). IVIM application makes it possible to calculate diffusion-weighted synthetic images (high b values), in order to facilitate the visualization of most of the tissue portions of the lesion (Figure 3).

The T1 perfusion sequence (DCE) is analyzed thanks to the workflow dedicated to Female Pelvis studies. Viewing the signal enhancement curve as soon as the Female Pelvis application is opened saves time. Indeed, the staging of ovarian lesions is done thanks to the signal enhancement curve of the analyzed lesion in comparison with that of the myometrium (Figure 4).

The Female Pelvis application superimposes the functional maps (AUC, Ktrans) and the conventional sequences, allowing optimal positioning of the regions of interest (Figure 5). In this case, the different tissue portions of the lesion have type 2 curves.

Addition

IVIM, mainly the perfusion fraction (f '), is a significant add-on to the analysis of Ktrans obtained values. Texture analysis could be used to evaluate remodeling of the extracellular matrix. By delineating the fibrillar morphology of collagen with first-order (histogram) or second-order indices (co-occurrence matrix).
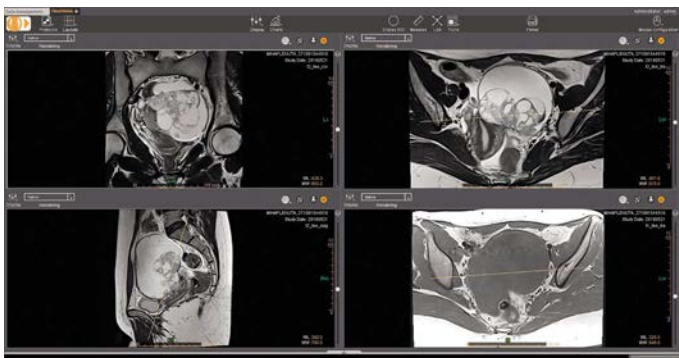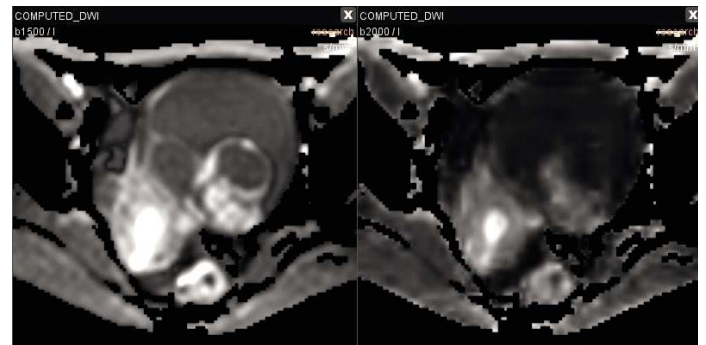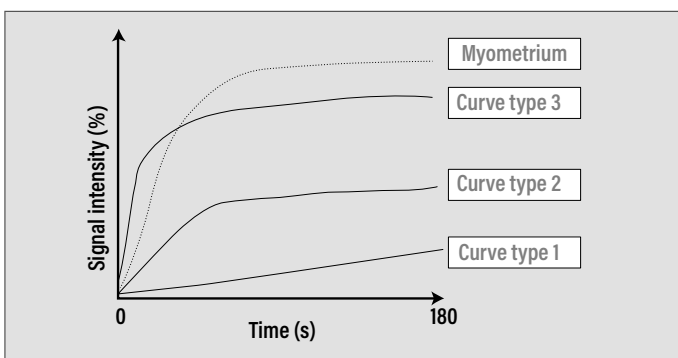

Figure 2

Figure 3

Figure 4   Type 1: Benign
            Type 2: Borderline
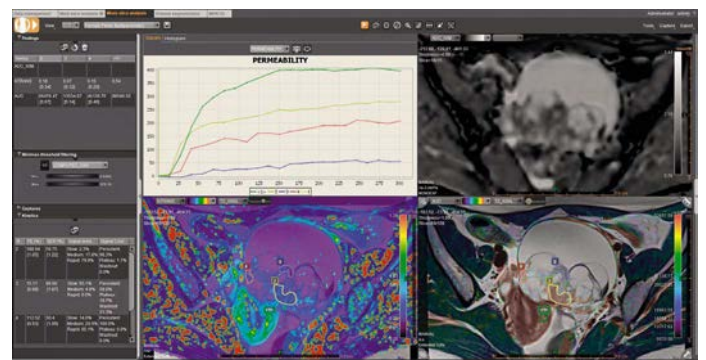   Type 3: Malignant

Figure 5

References

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3. Texture analysis applied to second harmonic generation image data for ovarian cancer classification. Wen BL, Brewer MA, Nadiarnykh O, Hocker J, Singh V, Mackie TR, Campagnola PJ.

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