

Diagnostic imaging of ovarian masses and not only — beyond ultrasound

Monika Bekiesinska-Figatowska 

Department of Diagnostic Imaging, Institute of Mother and Child, Warsaw, Poland

Dear Sir,

following the editorial in one of the issues of *Ginekologia Polska* in which it was stated that “the primary goal of ovarian tumor diagnosis is to determine the nature of the lesion (benign, malignant) and to assess the possibility of sparing surgical treatment and to verify the need for surgery in the case of a non-malignant lesion” [1], I read detailed guidelines for the diagnostic and therapeutic algorithm for ovarian tumors in children that were published earlier last year [2]. Although I was pleased to find that radiologists representing Pediatric Section of the Polish Medical Society of Radiology (PLTR) were involved in their preparation, the issue of ovarian lesions imaging was only included in the Supplementary/ /additional files, and magnetic resonance imaging (MRI) was not included in the “Algorithms without acute symptoms”, while in the “Observation choice criteria” it was recorded on a par with computed tomography (CT) under “preparation for elective surgery” as: “in case of diagnostic uncertainty, consider CT and MRI”.

I fully agree that MRI (and not CT!) should be used in cases that are diagnostically unclear — this is the position of the European Society of Urogenital Radiology (ESUR), among others, and applies to any age group: [ultrasound (US)] “US is the first diagnostic tool to detect an ovarian mass. If the mass is indeterminate at US, an MRI should be performed... For women with indeterminate adnexal masses MR imaging is the method of choice. In these women MR imaging can reduce the number of unnecessary surgeries for benign lesions and the risk of missing malignant lesions... CT may be used in emergency situations, i.e., acute pelvic pain... Contrast enhanced CT, MRI and PET/CT are used for staging and follow-up” [3], the latter concerns ovarian cancer in adult women mainly.

Ultrasound strongly depends on the operator’s skills, knowledge and experience. The use of the recently developed Ovarian-Adnexal Reporting and Data System (O-RADS; originally applied to US [4], later also to MRI [5]) by an experienced operator certainly increases the chances of correctly diagnosing the nature of an ovarian lesion (once it has been established that it is an adnexal lesion at all). If this does not happen, then no CT, at any age of the patient, is a problem-solving tool, as it 1) has too limited tissue resolution, 2) burdens the patient — particularly important in the pediatric population — with a dose of ionizing radiation and iodine contrast agent, 3) is incompatible with the ALARA principle (As Low As Reasonably Achievable) and with 4) the “Image gently” campaign [6]. The same, by the way, applies to any local evaluation of the reproductive organs in any age group. On CT one cannot assess the extent of endometrial or cervical cancer infiltration and this exam should neither be ordered nor performed for such indications.

Magnetic resonance imaging is a problem-solving tool as it has already been stated above and in the author’s own experience as well as in that of the team of radiologists at the Department of Diagnostic Imaging of the Institute of Mother and Child in Warsaw [7]. Let me illustrate it with a clinical case of a 34-year-old woman who was referred to CT with a clinical question whether her adnexal cysts are endometrial or not. After CT the answer was that they might be endometrial or not (Fig. 1). And another example: a 12-year-old girl with intellectual disability and constipation, a patient of the Neurology Clinic, was diagnosed with a giant adnexal cyst on US and offered surgery, but the neurologists referred the child beforehand to MRI, which showed a giant rectum and sigmoid colon bloated with fecal masses and misinterpreted as “adnexal cyst” (Fig. 2), thus saving the child from unnecessary surgery.

Corresponding author:

Monika Bekiesinska-Figatowska
 Department of Diagnostic Imaging, Institute of Mother and Child, Warsaw, Poland
 e-mail: monika.bekiesinska@imid.med.pl

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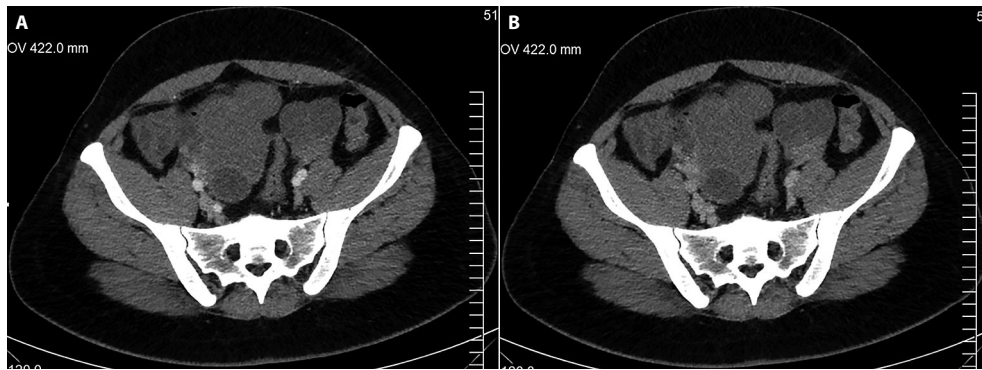


Figure 1. Computed tomography (CT) in the arterial (A) and venous (B) phase. Bilateral multilocular dense cystic adnexal lesions that may represent endometriosis. The clinical problem is not solved after CT

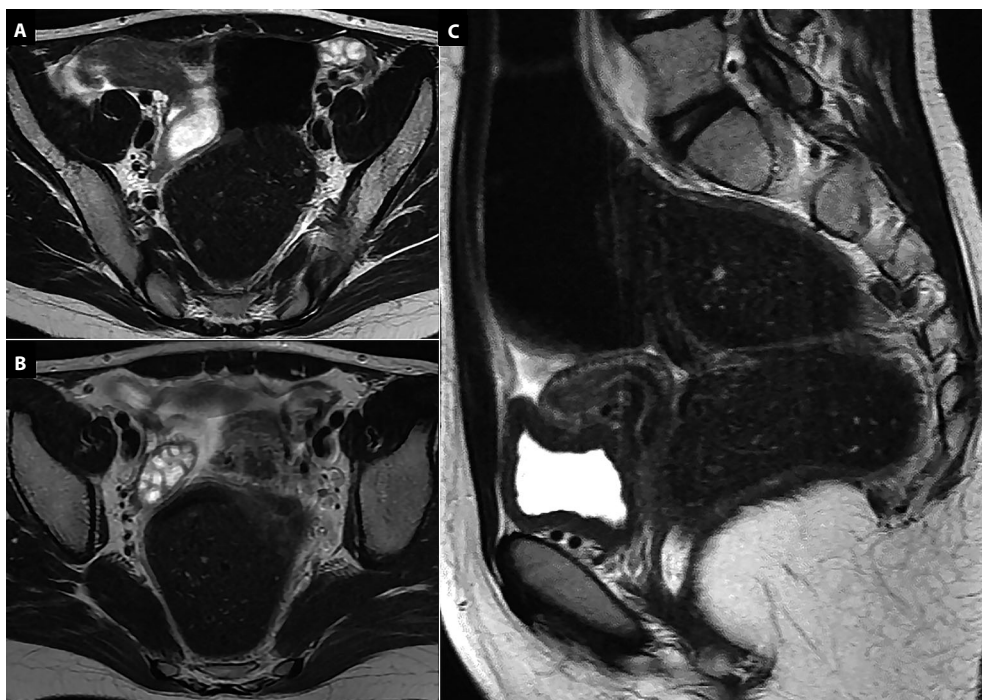


Figure 2. Magnetic resonance imaging (MRI) in T2-weighted images; **A.** Axial plane, sigmoid colon distended by feces and gas, normal left ovary; **B.** Axial plane, sigmoid colon distended by feces, normal right ovary; **C.** Sagittal plane, giant sigmoid colon distended by feces and gas, normal uterus

It has been postulated for years to incorporate MRI in diagnostic algorithms in gynecology and obstetrics before laparoscopy, not only in girls but in all age groups, not only in case of adnexal masses but in other clinical situations, e.g., endometriosis, not only by radiologists but also by gynecologists-obstetricians [e.g., 8].

I hope to achieve this goal together.

Article information and declarations

Author contributions

The only author.

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Conflict of interest

The author have no conflict of interest.

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