

First report of MRI findings in a case of an autoamputated wandering calcified ovary

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Abstract: An autoamputated wandering calcified ovary (AWCO) is an extremely rare cause of abdominal calcification in the pediatric population. We present the magnetic resonance imaging (MRI) features of AWCO in a child. To our knowledge, the MRI features of AWCO have not been previously described in the published literature. Our case report indicates that the MRI findings are characteristic in the diagnosis of an AWCO and can completely obviate the need for invasive procedures in this mostly benign disease. An AWCO should be considered in all cases of mobile calcific opacities on radiographs in female patients. We advise that MRI be conducted in all suspected cases of AWCO for accurate and noninvasive diagnosis, and regular follow-up should be performed with ultrasound. The findings in our case report have the potential to change the course of investigations and management in suspected cases.

Keywords: magnetic resonance imaging, ovary, adnexa, autoamputation, wandering calcification

Introduction

Autoamputation of an ovary is an extremely rare condition.¹⁻⁸ Torsion of an ovary or an ovarian lesion and the adnexa can lead to infarction and necrosis and subsequent amputation of the ovary.¹⁻³ An amputated ovary gets calcified (dystrophic calcification) and may freely float in the peritoneal cavity.³ In most cases, a blunt ending fallopian tube is noted on the involved side with the free-floating calcified ovary during surgery or laparoscopy.³ Confirmation of the diagnosis of an autoamputated wandering calcified ovary (AWCO) in most of the previously reported cases was made during surgery or laparoscopy, and all of these cases were evaluated by X-rays, ultrasound, and computed tomography (CT) scan alone or in combination.¹⁻⁸ A magnetic resonance imaging (MRI) study has not been conducted in any of these previously reported cases of AWCO.¹⁻⁸ This is the first MRI report of its kind in the literature of an AWCO in a pediatric patient.¹⁻⁸ We describe the characteristic MRI features of AWCO in this report, and review the literature about the autoamputation of ovaries or the adnexa.

Case material

A 9-year-old Asian Indian girl presented to the emergency department with a complaint of right lower abdominal pain. The pain was of 2 hours' duration and colicky in nature. She was afebrile and in good general condition. No abdominal guarding, rigidity, or rebound tenderness was noted on examination. Her past medical history was not significant. She was born by normal vaginal delivery in a hospital, and the antenatal and perinatal period was uneventful. Prenatal ultrasound was not done and

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no radiological investigations were done since birth. Urine and blood examinations were normal. A plain erect abdominal X-ray and an abdominal ultrasound were performed. A 1.2 cm oval calcific opacity was noted in the left side of the pelvis on the abdominal plain X-ray (Figure 1A), and an ultrasound of the abdomen was unremarkable. She was managed conservatively with analgesics. She was sent home after the pain subsided and called again for evaluation of the left pelvic opacity. Another abdominal plain X-ray obtained after a week showed the same opacity in the pelvis in the midline (Figure 1B). A CT scan was performed, suspecting the opacity to be a vesical calculus, which showed an oval calcified lesion in the right adnexa (Figure 2). The CT scan findings raised suspicion of an ovarian dermoid. No fat density was noted in relation to the wandering calcified pelvic lesion. MRI was performed for further evaluation. It showed an absent right ovary and a calcified lesion in the left adnexa adjacent to the left ovary (Figures 3–5), suggesting that it was an autoamputated wandering calcified right ovary. An absent right adnexa and a blunt-ending right fallopian tube were very well visualized on MRI, and they were best visualized on short T1 inversion recovery images. A normal left ovary was very well demonstrated on T2-weighted MRI images. On fat suppressed T1-weighted images, the AWCO appeared as an oval hyperintense lesion with a central hypointense area. Peripheral hyperintensity on T1-weighted images in AWCO can be due to methemoglobin or soft calcifications, and the central hypointense area can be due to thick or dense calcifications. The AWCO did not enhance on postcontrast images. Only regular follow-up with ultrasound was advised; no treatment was given, as it is a benign condition and generally does not require surgical

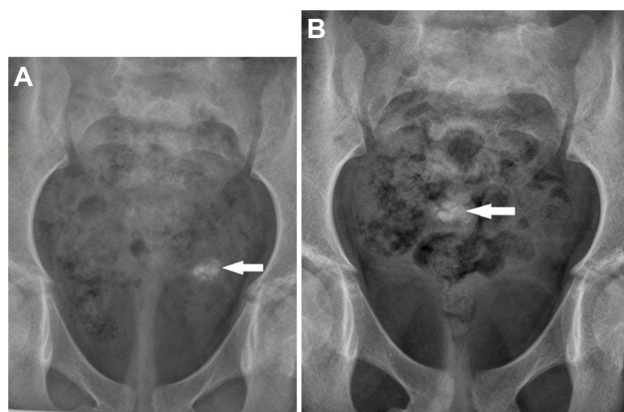


Figure 1 Abdominal plain X-rays showing an oval calcific opacity. **Notes:** Abdominal plain X-rays showing an oval calcific opacity (arrow) (A) in the left pelvic area, (B) which migrated toward the midline in the next abdominal plain X-ray obtained after a week.



Figure 2 Axial computed tomography scan (bone window) image showing oval calcification (arrow) in the right adnexa.

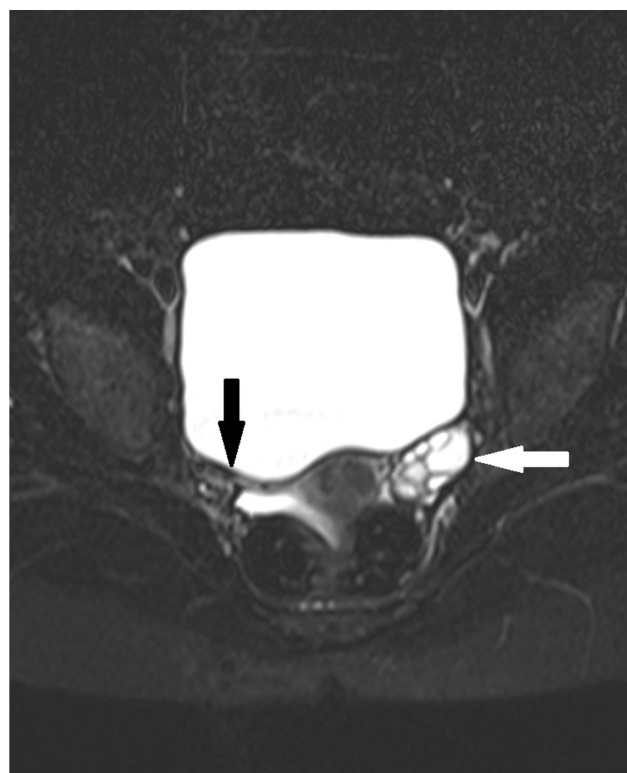


Figure 3 Axial short T1 inversion recovery magnetic resonance image showing absent right adnexa and blunt ending right fallopian tube. **Note:** Blunt ending right fallopian tube (black arrow); normal left ovary is noted (white arrow).

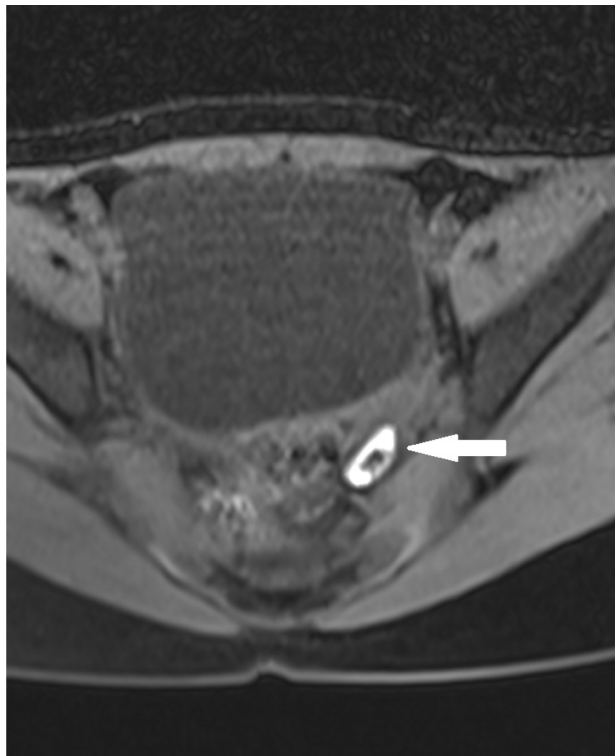


Figure 4 Axial fat suppressed T1-weighted image showing oval hyperintense lesion with thick central calcification in the left adnexa (arrow).

Note: Peripheral hyperintensity on the T1-weighted image can be due to methemoglobin or calcification.

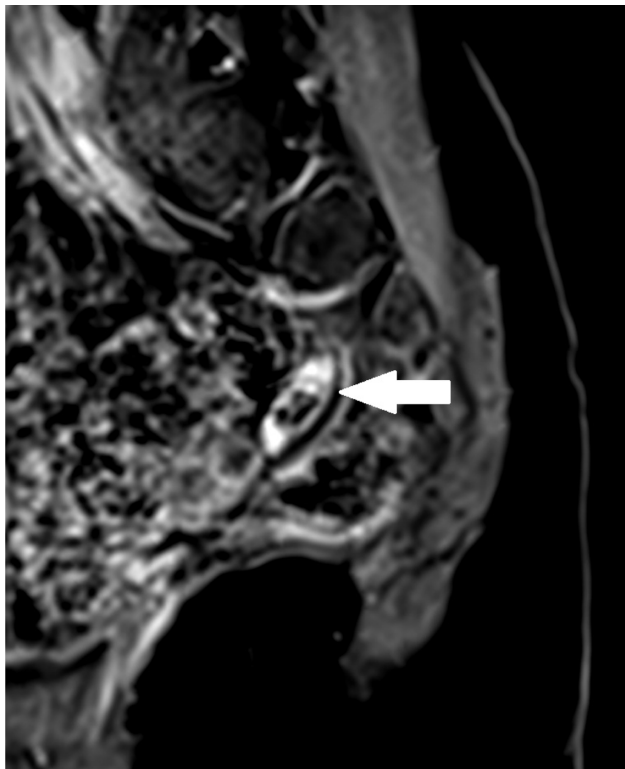


Figure 5 Sagittal post-gadolinium contrast T1-weighted fat suppressed image shows nonenhancing calcified oval lesion (arrow) in the left adnexa.

intervention unless complicated. Pain in the abdomen did not recur after the first episode and was considered as unrelated to the AWCO. The patient was followed up for 1 year until the writing of this report with an ultrasound study every 6 months, and no significant changes in the existing findings (or no new findings) were noted. The diagnosis by MRI completely obviated the need for laparoscopy, saving the patient from an unnecessary surgical procedure.

Discussion

The autoamputation of an ovary is an extremely rare cause of calcification on an abdominal plain X-ray in the pediatric population.³ Common causes of the pelvic calcification in young females include teratoma, ovarian neoplasm, chronic ovarian inflammation, appendicolith, urinary bladder calculus, lymph nodal calcification, calcification in a Meckel's diverticulum, gallstone, or neoplasms of the pelvic bones.⁹

Autoamputation of an ovary can be unilateral or bilateral, and it can occur during the prenatal or neonatal period.³ It is more common on the right side.¹⁻³ The autoamputated ovary is mostly found incidentally while investigating symptoms not related to it, on prenatal ultrasound, or during surgery for different or related causes.¹⁻⁸

In addition to our case, 96 cases of autoamputated ovaries were noted in the published literature, for a total of 97 cases.¹⁻³ Half (49/97) of these cases involved pediatric patients (<18 years).¹⁻³ Most of these cases were diagnosed via antenatal ultrasonography, likely because it is a very commonly performed examination.³ A wandering cystic abdominal mass was demonstrated on antenatal ultrasound in almost all of these cases.¹⁻³ In all cases, in older children, the diagnosis was made after laparoscopy or during surgery.¹⁻³ Only 14 cases of radiologically demonstrated wandering calcified ovary were identified in the literature, and MRI findings have not yet been described in this group.³ In our case, MRI clearly demonstrated the lack of an ovary/adnexa and a freely mobile oval calcified lesion (autoamputated ovary) in the pelvis, suggesting that it was an autoamputated wandering calcified right ovary. The MRI findings are characteristic in the diagnosis of an AWCO. Ultrasonography can show the absence of the adnexa, but MRI is superior in delineating soft tissue morphology. Also, ultrasonography may not demonstrate the displaced calcified ovary.¹⁰ CT scans can show calcifications very well, but they are limited in terms of resolving soft tissue abnormalities.⁹ Radiation risk from CT scans can be a concern in young females.¹¹ X-rays can only demonstrate mobile calcifications. Therefore, MRI is far better in conclusively demonstrating the absent adnexa and

also in localizing the wandering calcified ovary, thus making it the investigation of choice in suspected cases of AWCO.

Conclusion

The MRI findings are characteristic in the diagnosis of an AWCO, and they can completely obviate the need for laparoscopy in this benign condition. An AWCO should be suspected in all cases of mobile calcific opacities on radiographs in females. We advise that MRI be performed in all suspected cases of AWCO for accurate and noninvasive diagnosis, and that regular follow-up with ultrasound be performed. The findings in our case report have the potential to change the management of AWCO in suspected cases.

Disclosure

The authors report no conflicts of interest in this work.

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