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NEWS

Background Parenchymal Enhancement in Contrast-Enhanced MR Imaging Suggests Systemic Effects of Intrauterine Contraceptive Devices.

PURPOSE

BPE in DCE-MRI has been established as a sensitive marker of hormonal stimulation of the breast. Levonorgestrel-releasing intrauterine contraceptive devices (LNG-IUDs) are designed to exhibit only local effects. However, emerging evidence suggests that LNG-IUDs can be associated with systemic side effects similar to those of systemic hormonal medication. We investigated the association between LNG-IUD use and BPE in breast MRI as an established imaging biomarker of hormonal stimulation, to further explore possible systemic effects of LNG-IUDs.

METHODS AND MATERIALS

Our hospital data base was searched to identify premenopausal women without personal history of breast cancer or hormone or antihormone intake who had undergone standardized DCE breast MRI for screening between 01-2014 and 06-2020 at least twice, once with and without an IUD in place, with a minimum time of 4 weeks after IUD placement or removal. To avoid confounding ageing-related effects on BPE, half of included women had to have their first MRI without, the other half had their first study with IUD in place. A total of 48 premenopausal women (mean age, 45 years) were identified. Median time between the two studies was 27 months (range 1-77 months). Degree of BPE was analyzed according to the ACR categories. Statistical analyses were performed on the ACR categories using the Wilcoxon-matched pairs signed-rank test. A p-value less than 0.05 was considered statistically significant.

RESULTS

In 24/48 women (50%; [95%-CI: 35.9%-64.1%]), ACR categories did not change with vs. without IUD. In 23/48 patients (48% [33.9%-62.1%]), the ACR category was higher with vs. without IUD; in 1/48 (2% [0%-6%]), the ACR category was lower with vs. without IUD. The change of ACR category depending on presence or absence of an IUD proved highly significant ($p<0.001$).

CONCLUSIONS

The application of an IUD is associated with increased BPE in breast MRI. This suggests that IUDs do have a systemic hormonal effect.

CLINICAL RELEVANCE/APPLICATION:

IUDs can lead to increased BPE with implications on diagnostic accuracy in breast MRI. Moreover, the observed increased BPE supports the observation that IUDs can lead to side effects similar to HRT.