

EDITORIAL

The Radiology Diagnostic Oncology Group (RDOG) and the ovary

John A Spencer

Department of Clinical Radiology, St James's University Hospital, Leeds, UK

Over the last decade or so the Radiology Diagnostic Oncology Group (RDOG) have published results of a number of important studies comparing US, CT and MR imaging for cancer diagnosis and staging applications. Each is well planned, accrues hundreds of patients and involves imaging in a number of major USA cancer centers. The studies have some limitations but are always important, credible and influential.

Over the last three years the RDOG has published results of a major study of women with suspected primary ovarian cancer. These concern:

1. Comparison of US, CT and MR imaging for diagnosis and staging prior to surgery^[1].
2. Evaluation of these modalities in predicting surgical findings^[2].
3. Comparison of primary and metastatic ovarian cancers^[3].

These studies have shown that both CT and MR imaging are superior to US in assessment of the nature of ovarian masses, with the highest accuracy for MR imaging^[1]. In assessment of the stage of disease all had similar accuracy (0.91) since the presence of ascites predicted peritoneal dissemination. However in determination of the sites and extent of metastatic deposits, US was inferior to both CT and MR imaging^[2]. US was poor for depiction of peritoneal metastases. The ready availability of CT makes it the investigation of choice for planning surgery with suspected ovarian cancer. It should replace urography and barium studies for assessment of hollow organ involvement.

CT remains inferior to surgical staging in detection of tiny peritoneal, omental and mesenteric nodules even with meticulous technique in the hands of world experts^[3]. But this is not its role. Rather, in the presence

of bulky disease CT predicts the likely success of cytoreductive surgery. CT also indicates when the gynaecologist may require assistance from other surgical colleagues to achieve effective debulking, when, for example, there is involvement of ureters, pelvic small bowel or colon. Bulky disease in the supracolic compartment around the spleen and stomach, within suprarenal lymph nodes, and affecting the subdiaphragmatic recesses and parenchyma of the liver is usually beyond the scope of surgery.

Another advantage of CT is the use of guided biopsy as an alternative to surgery to provide a definitive histological diagnosis in women with inoperable disease and in women with poor performance status^[4]. There is current interest in neoadjuvant chemotherapy followed by interval surgery for these women. Biopsy is also valuable when there is a concern that peritoneal carcinomatosis is a result of disease metastatic to the ovary from the breast or GI tract. The CT appearance of ovarian metastases may be indistinguishable from that of primary ovarian cancer. Both may produce the bilateral, solid masses considered typical of Krukenberg tumours. In further analysis of the RDOG study the only factor favouring primary ovarian cancer was multilocularity as shown by US or MR imaging^[5]. This was not a significant feature for CT. The stomach, colon, appendix and pancreas are within the examination volume and should be inspected as potential primary cancer sites within the abdomen. A definitive histologic diagnosis is required as debulking surgery is inappropriate for such metastatic disease and chemotherapeutic regimen differ.

The RDOG studies and other recent work argue for a central role of CT in multidisciplinary care and planning management of ovarian cancer and peritoneal carcinomatosis. Peritoneal biopsy, using CT or US guidance, is valuable and useful alternative

This paper is available online at <http://www.cancerimaging.org>. In the event of a change in the URL address, please use the DOI provided to locate the paper.

to laparoscopy or exploratory surgery when there is diagnostic uncertainty, or with advanced disease beyond the scope of cytoreductive surgery^[4].

References

- [1] Kurtz AB, Tsimikas JV, Tempany CMC *et al.* Diagnosis and staging of ovarian cancer: comparative values of Doppler and conventional US, CT, and MR imaging correlated with surgery and histopathologic analysis—report of the Radiology Diagnostic Oncology Group. *Radiology* 1999; 212: 19–27.
- [2] Tempany CMC, Zou KH, Silverman SG *et al.* Staging of advanced ovarian cancer: comparison of imaging modalities—report from Radiology Diagnostic Oncology Group. *Radiology* 2000; 215: 761–7.
- [3] Coakley FV, Choi PH, Gougoutas CA *et al.* Peritoneal metastases: detection with spiral CT in patients with ovarian cancer. *Radiology* 2002; 223: 495–9.
- [4] Spencer JA, Swift SE, Wilkinson N *et al.* Peritoneal carcinomatosis: image guided peritoneal core biopsy for tumor type and patient management. *Radiology* 2001; 221: 173–7.
- [5] Brown DL, Zou KH, Tempany CMC *et al.* Primary versus secondary ovarian malignancy: imaging findings of adnexal masses in the Radiology Diagnostic Oncology Group study. *Radiology* 2001; 219: 213–8.