

The Impact of Oophorectomy on Breast Cancer Survival in Patients with a BRCA1 Mutation

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Preventive bilateral salpingo-oophorectomy (BSO) provides a survival advantage for women with breast cancer and a BRCA1 mutation, if done before or after diagnosis. It is of interest to see if the benefit of BSO varies according to the age at breast cancer diagnosis, and the ER-status of the tumour. We are following a cohort of 2904 women with breast cancer and a BRCA1 mutation for survival. We excluded women with metastatic cancer, with cancer diagnosed after age 70, and with cancers of greater than 10cm in size, leaving 2773 women for the present analysis. Of these, 1730 had an oophorectomy before breast cancer and 1442 had an oophorectomy after breast cancer (mean time from diagnosis to BSO 2.4 years). We followed the women from diagnosis to death for a mean of 9.5 years (range 0.1 to 27.5 years). 312 women died of breast cancer. The 20 year breast cancer survival was 82%. We conducted a survival analysis (Cox model) including BSO as a time-dependent variable, adjusting for tumour size (<2cm, 2-5cm, 5-10 cm) and lymph node status (positive/negative). Hazard ratios were for breast cancer survival. Of those women diagnosed with breast cancer before age 50, BSO was associated with a hazard ratio of 0.55 (95 CI: 0.42, 0.71; p<0.0001). Of those women diagnosed with breast cancer after age 50, BSO was associated with a hazard ratio of 0.44 (0.27- 0.72; p < 0.001). Of all women diagnosed with ER-positive, HER2- breast cancer, BSO was associated with a hazard ratio of 0.91 (0.51,1.62; p = 0.75). Of all women diagnosed with HER2+ breast cancer, BSO was associated with a hazard ratio of 0.66 (0.35- 1.26 p= 0.21). Of all women diagnosed with triple-negative breast cancer, BSO was associated with a hazard ratio of 0.47 (0.34, 0.64; p <0.0001). Of those women diagnosed with triple-negative breast cancer before age 50, BSO was associated with a hazard ratio of 0.44 (0.30, 0.63; p <0.0001). Of those women diagnosed with triple-negative breast cancer after age 50, BSO was associated with a hazard ratio of 0.60 (0.29, 1.27) p = 0.18 . In summary, BSO after breast cancer in BRCA1 carriers is associated with improved survival for patients with triple negative breast cancer.