chemotherapy. Overall CBR: 41%; median TTP and OS: 4.1 and 23.6 months, respectively.
Subgroup analysis:
• DFI – >9 years versus 3–6 years: CBR – 54% versus 27%, respectively ($P = 0.03$)
• Metastatic sites – 1–2 versus ≥3: CBR – 66% versus 34%, respectively ($P = 0.03$)
• 1st, 2nd and 3rd line endocrine therapy duration ≥ 1 year versus <1 year): CBR – 43% versus 41% ($P = 0.85$), 53% versus 18% ($P = 0.03$) and 56% versus 20% ($P = 0.17$), respectively
• Prior lines of treatment (2–3 lines versus ≥ 4 lines): CBR – 50% versus 31%, respectively ($P = 0.11$); this was the only subgroup where we observed a statistically significant prolonged TTP (5.4 months versus 3.4 months, respectively, $P = 0.03$).
Conclusion: In our retrospective study, fulvestrant was associated with a significantly improved CBR for patients with longer DFI and fewer involved sites; patients with treatment duration ≥ 1 year with prior lines of endocrine therapy were also more likely to benefit.

A Multi-institutional Study of Risk Estimates Derived from Oncotype DX

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Purpose: Oncotype DX, a molecular signature used in early ER+ breast cancer, produces a recurrence score (RS) indicating 10 year distant disease recurrence (DDR) risk. Both RS and a percentage estimate (RS%) based on 5 years of adjuvant tamoxifen have utility in prognostics-based chemotherapy decision-making. Tang *et al.* [1] showed in ER+, N0 patients that clinicopathological factors (tumour size, grade, age at surgery, endocrine treatment type) when added to RS produce a score (RSPC) that has significantly more prognostic value than RS alone or a model using tumour grade, size and patient age alone. We therefore determined the relationship between RS% and RSPC and agreement of categorical status derived from the two measures in clinically tested patients, and examined evidence of an association between RS% and chemotherapy recommendation.
Methods: Anonymised data were collected from four London NHS Trusts on consecutive patients having Oncotype DX tests ordered as part of routine clinical care in line with NHS England agreed use; RS% and RSPC scores were calculated and agreement of risk category assignment was compared (risk category assigned for low–intermediate and intermediate–high using 10% and 20% cut-points, respectively); RS% derived categorical scores were correlated with chemotherapy recommendation.
Results: Data were available for 171 tests (169 patients). Mean RS% was 12.4% (range 3–34%); mean RSPC was 17.5% (range 4–63%). The assigned risk category agreed in 87/171 (50.9%), differed by one increment in 80/171 (46.8%) (RS% > RSPC, 10/171, 5.9%: RS% < RSPC, 70/171, 40.9%) and by two increments in 4/171 (2.3%) (all, RS% < RSPC). Chemotherapy was recommended to 15%, 36% and 68% of patients in RS% risk categories low, intermediate and high, respectively.
Conclusion: RS% and RSPC DDR estimates produced differing risk category assignment in 49.1% of cases, in the great majority of these RS% indicated a lower risk category than RSPC.

Reference

[1] Tang G, *et al. J Clin Oncol* 2011;29(33):4365–4372.

Long-term Follow-up of Patients with Early Breast Cancer (EBC) and High Prevalence of Vitamin D Deficiency (VDD)

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Purpose: We have previously described a cohort of patients with newly diagnosed EBC and high prevalence of VDD [1]. Here we report on long-term outcomes and results of repeat vitamin D (vitD) testing.
Methods: Serum vitD levels were prospectively recorded in patients with EBC. Outcome data were recorded from patient files. VDD was defined as serum total 25-hydroxy vitD < 25 nmol/l. Repeat vitD levels were obtained after a minimum of 2 years of follow-up. χ^2 tests and multiple logistic regression were used to correlate vitD and clinical factors. Cox PH and restricted mean survival were used to investigate the effect on recurrence risk.
Results: At diagnosis, median vitD was 44 nmol/l (IQR 25–73) and 61 (24% patients) were VDD. In a multivariate model, VDD was significantly associated with ER negative disease and Asian ethnicity. After a median follow-up of 76 months (IQR 62–87) 47 patients (18%) experienced a recurrence. Using restricted mean survival analysis, no difference in recurrence risk was observed between groups overall, or in the pre-menopausal group, but there was a difference in the post-menopausal group (HR = 1.79; 95%CI 0.77–4.18; $P = 0.0127$). Repeat vitD levels were available from 136/258 patients. The median repeat vitD level was 59 nmol/l (IQR 38–74). The mean difference between baseline and repeat measurement was 7.9 (95%CI 2.4–13.5). In logistic regression analysis, age <50 years appeared to be significantly associated with repeat vitD < 25.
Conclusion: In this study, nearly a quarter of patients (and more than a third of Asian patients) were severely vitD deficient at diagnosis. In post-menopausal patients VDD was associated with increased risk of recurrence, although no difference was observed in the overall patient cohort.

Reference

[1] Owczarczyk K, Morden J, Li S, Steer K, Rainbow S, Makris A. The prevalence of severe vitamin D (vitD) deficiency and its effect on tumour indices and clinical outcomes in patients with early breast cancer (EBC). Available at: http://meetinglibrary.asco.org/content/96327.

Bone Mineral Density Screening in Invasive Breast Cancer Patients Treated with Anastrozole in Adjuvant Setting

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Purpose: Osteopenia and osteoporosis due to bone loss are common in women undergoing breast cancer treatment with chemotherapy and hormone therapy. Tamoxifen improves bone mineral density (BMD) in post-menopausal women but aromatase inhibitors (AIs) may increase bone loss. Anastrozole (an AI) is approved for adjuvant hormone therapy in post-menopausal women with oestrogen positive breast cancer. Over a 5 year follow-up period women treated with anastrozole experience increased incidences of fracture in comparison with those treated with tamoxifen [1]. A baseline standard BMD scan (DEXA) is recommended at the start of anastrozole therapy (which is the AI of the choice at UHNM). It is also recommended to repeat this BMD after 2–3 years to assess the bone loss unless normal at the outset. We evaluated the baseline BMD in such patients to look at the incidence of osteopenia and osteoporosis and its impact on treatment.
Methods: We studied hospital notes and records of 100 sequential patients diagnosed with breast cancer from January 2013 to June 2013 (6 months). Baseline DEXA scan results were studied to evaluate BMD of patients on anastrozole.
Results: Among those studied, 16 were intraductal carcinoma *in situ* (DCIS), which were excluded. There were 84 invasive breast cancer cases. 65 were ER positive, 16 were triple negative and 3 were HER2 positive. Among ER positive patients, 13 were started on anastrozole as adjuvant treatment and all of them were postmenopausal. A DEXA scan was carried out in 11 of them to measure baseline BMD. 2 (18%) showed osteoporosis with a T score reading of lower than −2.5, 5 (45%) had T scores between −1 and −2.5 showing osteopenia and 4 (36%) of them were found to have a T score reading above −1, which is considered as normal. The T score analysis was as per WHO guidelines.
Conclusion: In our audit, osteopenia or osteoporosis at the start of therapy was common. Moreover, 1 of 5 patients was detected to have osteoporosis at the start. The patient with osteoporosis was started on bisphosphonates together with anastrozole. It is difficult to draw a conclusion from a small