Coming of age : treatment and outcomes in older patients with breast cancer

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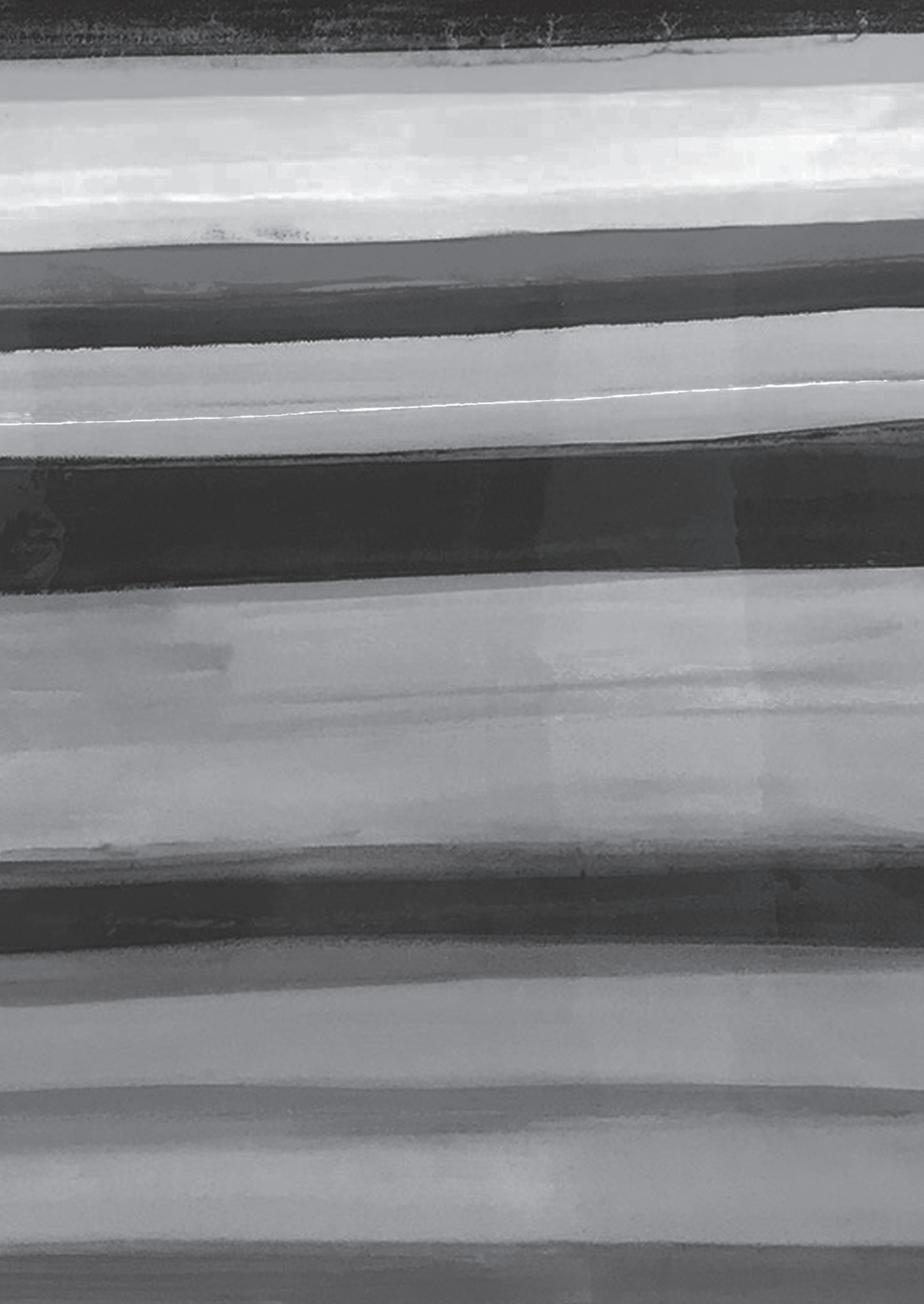

CHAPTER 4

Physical functioning in older patients with breast cancer: a prospective cohort study in the TEAM trial

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ABSTRACT

Background: Previous retrospective studies have shown that older cancer survivors are affected in physical functioning after treatment. Prospective data of physical functioning in older patients with breast cancer are lacking. The aim of this study was to assess change in physical functioning in different age groups of patients with hormone-receptor positive breast cancer who were enrolled in the in the Tamoxifen Exemestane Adjuvant Multinational (TEAM) phase III trial.

Patient and methods: Two physical parameters were assessed. Physical functioning was assessed from the EORTC QLQ-C30 questionnaire one (T1) and two years (T2) after diagnosis. Physical activity was measured in Metabolic Equivalent of Task (MET) hours/week at T1 and T2. Physical activity before diagnosis (T0) was assessed retrospectively at the T1 questionnaire. Patients were divided in three age groups; age < 60, 60-70 and 70 years and older. Decline in physical functioning was assessed using linear regression analysis. Differences in mean values of physical activity levels were calculated using repeated measures one way ANOVA.

Results: A total of 431 patients were included for analysis. In all age groups, physical activity levels at T1 and T2 were significantly lower than prediagnostic physical activity levels (T0) (P<0,001 for all age groups). Age above 70 years was independently associated with decline in physical functioning between T1 and T2 (beta -4.62, 95% CI -8.73 – - 0.51, P=0.028).

Conclusion: In contrary to younger patients, patients aged over 70 years treated with breast surgery and adjuvant hormonal therapy did not improve between years one and two after diagnosis to the same extent as younger patients.

INTRODUCTION

Breast cancer is the most common diagnosed cancer among women and the second leading cause of cancer-related mortality in women in the United States[1]. Due to increasing life expectancy, breast cancer is becoming a disease of older adults. Of the estimated 232.670 new cases of breast cancer in 2014 in the United States, 41.4% of these patients was 65 years or older.[1,2,3]

Older patients comprise a very heterogeneous group, with the majority having at least one co-morbidity.[4] Multiple comorbidity can result in poorer functional status, quality of life and health outcomes.[5] Furthermore, older patients with breast cancer are at increased risk for adverse events and toxicities of breast cancer treatment.[6] Consequently, older patients may be more vulnerable to decline of physical functioning during and after cancer treatment.

A recent meta-analysis has shown that physical activity has clinically important effects on physical function, psychological outcomes and quality of life.[7] Functional limitations after breast cancer treatment are associated with higher all-cause mortality. Possibly, physical activity could modify these functional limitations.[8] In addition, a systematic review has shown that physical activity is associated with an improved overall survival. However, it remains unclear if this is a causal relation or an association that is explained by other factors.[9] In older adults, maintaining physical function could make the difference between independent and assisted living. Therefore it is important to maintain the level of pre-diagnostic physical activity during and after breast cancer treatment in older patients.

Previous studies have shown that older cancer survivors are often affected in physical functioning, while younger patients are mostly affected in psychological functioning.[10] However, these studies were mostly retrospective in design and did not assess pre-diagnostic physical functioning. In addition, most of these studies had no information regarding co-morbidities and treatment regimens, which may influence physical activity. The Tamoxifen Exemestane Adjuvant Multinational (TEAM) phase III randomized controlled trial was originally designed to compare two endocrine therapies for early hormone-receptor-positive breast cancer. Long term exemestane alone was compared to tamoxifen followed by exemestane. In contrast to other trials, the TEAM trial had no upper age limit. Therefore a relatively high number of older patients were included in the trial. The TEAM-lifestyle side study provides extensive information on physical functioning before, one and two years after randomization. Due to its trial design, co-morbidities and treatment strategies were well documented.

The aim of this study was to assess change in physical functioning in different age groups after surgical treatment among patients with hormone-receptor-positive early stage breast cancer.

MATERIALS AND METHODS

The TEAM trial is a phase III open label, international randomized trial comparing 5 years of exemestane with 2.5-3 years tamoxifen followed by 2.5-3 years of exemestane in hormone receptor positive, early breast cancer patients. Details of the study design and population have been published previously.[11] The TEAM lifestyle (TEAM-L) study is a side study from the TEAM trial. The population and study design of the TEAM-L study have been extensively described in detail elsewhere.[12] Only patients with an Eastern Cooperative Oncology Group (ECOG) performance status of 0 or 1 were included in this trial. There was no upper age limit.

In short, lifestyle and quality of life questionnaires were sent to Dutch participants of the TEAM trial to prospectively investigate lifestyle habits. One year after randomization participants received a questionnaire on current (T1) and pre-diagnostic (T0) physical activity levels and on current (T1) quality of life indicators. Two years after randomization a similar questionnaire was sent out (T2).

Data collection

Patient, tumour and treatment characteristics were collected. Patients were included if physical functioning derived from the EORTC questionnaire was available at T1 and T2. A previous study within the TEAM-L study did not observe differences in clinical characteristics between the population of the TEAM trial and the subgroup of TEAM-L respondents at T2.[12] Patients were divided into three age groups: age younger than 60, 60 to 70 years and 70 years and older.

Physical functioning was measured using two different questionnaires. First, self-reported physical functioning was assessed in the validated European Organisation for Research and Treatment of Cancer quality of life questionnaire (EORTC QLQ –C30, version 3.0) at T1 and T2. The EORTC QLQ-C30 contained five items which were calculated into one physical functioning score as described previously.[13]

Additionally, physical activity was quantified by using the validated European Prospective Investigation into Cancer (EPIC) physical activity questionnaire.[14] In this questionnaire, patients were asked to report the amount of time they spent per week during summer and winter in recreational and household activities. Metabolic equivalent values were calculated

from the mean hours reported to estimate the intensity of recreational and household activity per week (Metabolic Equivalent of Task (MET) hours/week).[15]

Statistical Analysis

Statistical analysis was performed in SPSS version 20 and Stata 12.0. The TEAM lifestyle study was designed to assess change in functioning and quality of life in subgroups of patients. We used two-sided testing and P values of 0.05 or smaller were considered statistical significant. If a value of a specific characteristic of an individual patient was missing it was assigned to the "unknown" category of that characteristic. The proportion of missing values for each characteristic is shown in table 1 (unknown categories). For regression analysis, unknown categories in the characteristics were included as a separate category in the analysis (table 2). Baseline characteristics among different age groups were compared using chi square tests. Mean physical functioning scores derived from the EORTC questionnaire and mean MET-hours/week in three age categories were calculated. Mean differences in physical functioning and physical activity between age groups were compared using one way ANOVA. Mean differences at the different time points within age groups were calculated by paired sample t-test and repeated measures one way ANOVA. Change in physical functioning was calculated by subtracting the calculated score for physical functioning from the EORTC questionnaire at T2 by the calculated score at T1. Univariate and multivariable regression were used to estimate the change in physical functioning for several variables. In the multivariable regression analysis we used an adjusted model, correcting for all known variables (age, number of comorbidities, BMI, ECOG performance score, T-stage, N-stage, grade, most extensive surgery, most extensive axillary surgery, radiotherapy, chemotherapy, endocrine therapy).

RESULTS

Patient characteristics

Overall, 431 patients were included (figure 1). At baseline, Body-Mass Index (BMI) was higher in the older patients (P=0.006). Patients in the oldest age group were more likely to present with stage T2 breast cancer (P=0.010). In older patients a mastectomy was performed more frequently in comparison to their younger counterparts (P=0.004). Additionally, older patients received radiotherapy and chemotherapy less often (P=0.003, P<0.001 respectively). Older patients were more frequently assigned to the exemestane treatment arm (P=0.008, table 1).

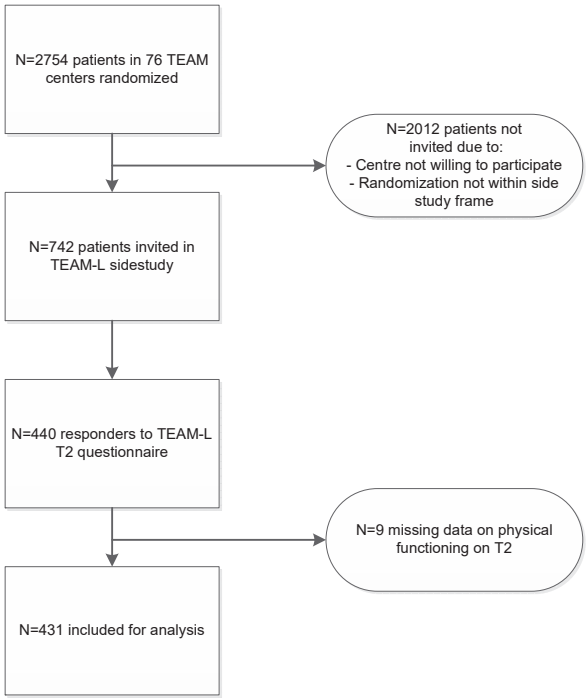

Figure 1. Flow chart of the inclusion of patients in the TEAM-L study.
T2, 2 year after the diagnosis; TEAM, Tamoxifen Exemestane Adjuvant Multicenter; TEAM-L, Tamoxifen Exemestane Adjuvant Multicenter Lifestyle.

Table 1. Patient characteristics

	Age < 60 (n=167)		**Age 60-70 (n=164)**		**Age ≥ 70 (n=100)**		
	n	(%)	n	(%)	n	(%)	**P-value***
Patient characteristics							
Number of comorbidities							
0	64	(38.3)	49	(29.9)	31	(31.0)	0.213
1 to 2	77	(46.1)	74	(45.1)	46	(46.0)	
≥ 3	26	(15.6)	41	(25.0)	23	(23.0)	
BMI at T1							
< 25	75	(44.9)	49	(29.9)	33	(33.0)	0.027
25-30	57	(34.1)	81	(49.4)	41	(41.0)	
≥ 30	31	(18.6)	31	(18.9)	20	(20.0)	
Unknown	4	(2.4)	3	(1.8)	6	(6.0)	
ECOG performance status							
0	137	(82.0)	129	(78.7)	76	(76.0)	0.755
1	20	(12.0)	26	(15.9)	17	(17.0)	
Unknown	10	(6.0)	9	(5.5)	7	(7.0)	

Table 1. Patient characteristics (*continued*)

	Age < 60 (n=167)		Age 60-70 (n=164)		Age ≥ 70 (n=100)		
	n	(%)	n	(%)	n	(%)	P-value*
Tumour characteristics							
T-stage							
In situ / T1	77	(46.1)	94	(57.3)	33	(33.0)	0.010
T2	79	(47.3)	60	(36.6)	60	(60.0)	
T3 / T4	9	(5.4)	9	(5.5)	7	(7.0)	
Unknown	2	(1.2)	1	(0.6)	0	(0.0)	
N-stage							
N0	42	(25.1)	40	(24.4)	33	(33.0)	0.216
N+	123	(73.7)	124	(75.6)	67	(67.0)	
Unknown	2	(1.2)	0	(0.0)	0	(0.0)	
Grade							
I	27	(16.2)	29	(17.7)	18	(18.0)	0.883
II	69	(41.3)	74	(45.1)	43	(43.0)	
III	56	(33.5)	51	(31.1)	34	(34.0)	
Unknown	15	(9.0)	10	(6.1)	5	(5.0)	
Treatment							
Most extensive surgery							
None	1	(0.6)	1	(0.6)	0	(0.0)	0.004
BCS	84	(50.3)	94	(57.3)	32	(32.0)	
Mastectomy	81	(48.5)	69	(42.1)	68	(68.0)	
Unknown	1	(0.6)	1	(0.6)	0	(0.0)	
Most extensive axillary surgery							
SNLB	37	(22.2)	35	(21.3)	28	(28.0)	0.704
ALND	128	(76.6)	127	(77.4)	70	(70.0)	
Unknown	2	(1.2)	2	(1.2)	2	(2.0)	
Radiotherapy							
No radiotherapy	48	(28.7)	44	(26.8)	48	(48.0)	0.003
Radiotherapy	118	(70.7)	116	(70.7)	51	(51.0)	
Unknown	1	(0.6)	4	(2.4)	1	(1.0)	
Chemotherapy							
No chemotherapy	44	(26.3)	124	(75.6)	100	(100.0)	<0.001
Chemotherapy	123	(73.7)	40	(24.4)	0	(0.0)	
Endocrine therapy							
Exemestane	83	(49.7)	71	(43.3)	63	(63.0)	0.008
Tamoxifen	84	(50.3)	93	(56.7)	37	(37.0)	

* P-values represent statistical significance of proportional differences among the three age groups

Physical functioning

Physical functioning, expressed as a mean score within a range of 0-100, is only reported between T1 and T2, no baseline results were available. As shown in figure 2, physical functioning in the oldest age group was significantly lower compared to the younger age groups at T1 and T2 (p<0.001 for T1 and T2). Patients aged 70 years and older showed a decrease in physical functioning of -2.59 points (SE 1.46) between T2 and T1 while patients aged 60 years or younger showed an increase in physical functioning of 1.86 points (SE 0.95), P=0.008. In addition, age above 70 years was an independent predictor for decline in physical functioning in multivariable regression analysis compared to the youngest age group (beta -4.62, 95% CI -8.73 – - 0.51, P=0.028, table 2).

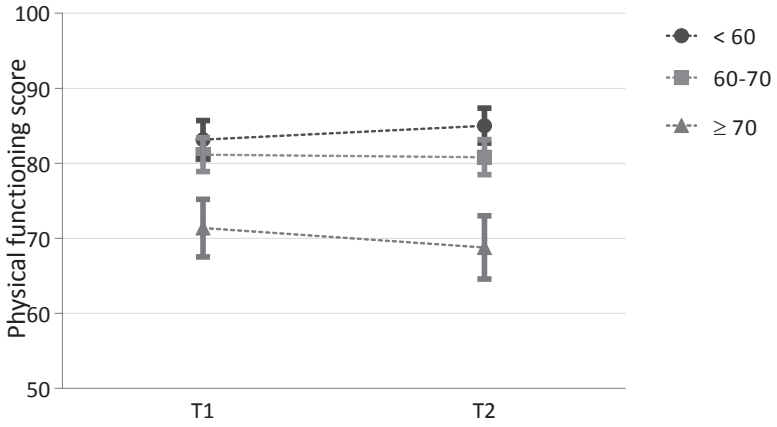

Figure 2: Mean physical functioning in different age groups
T1: one year after diagnosis; T2: two years after diagnosis. Mean physical functioning scores were calculated from the EORTC QLQ-C30 questionnaire.

Additional variables were tested for predictive value (table 2). ECOG performance score of 1 was predictive for decrease in physical functioning in multivariable regression analysis (beta -3.65, 95% CI -7.13 – -0.16, P=0.040). Chemotherapy was a significant predictor for increased physical functioning in univariate analysis (beta 3.11, 95% CI 0.68-5.55, P=0.012) . In adjusted analysis however, this effect was no longer significant (beta 0.40 95% CI -2.96-3.77, P=0.813). A trend was found for decrease in physical functioning among patients who were assigned to the tamoxifen-exemestane treatment arm, even though younger patients were more likely to receive this combination (beta -2.08, 95% CI -4.46-0.28, P=0.084). After adjusted regression analysis this effect increased (beta -2.44, 95% CI -4.98-0.02, P=0.052). The number of comorbidities was not predictive for physical functioning. No other tumour or treatment characteristics were predictive for change in physical functioning (table 2).

Table 2. Change in physical parameters between one and two years after diagnosis

	univariate			adjusted*		
	Bèta	95% CI	p-value	Bèta	95% CI	***P*-value**
Physical functioning						
Patient characteristics						
Age-group						
< 60	Ref			Ref		
60-70	-2.19	(-4.88-0.50)	0.110	-1.32	(-4.55-1.91)	0.422
≥ 70	- 4.46	(-7.55--1.36)	0.005	-4.62	(-8.73--0.51)	0.028
Number of comorbidities						
0	Ref			Ref		
1 to 2	0.14	(-2.57-2.85)	0.918	0.29	(-2.49-3.06)	0.839
≥ 3	-0.25	(-3.57-3.07)	0.883	0.34	(-3.14-3.82)	0.848
BMI at T1						
<25	Ref			Ref		
25-30	-0.25	(-2.96-2.45)	0.854	0.12	(-2.68-2.93)	0.932
≥ 30	-0.84	(-4.22-2.53)	0.623	-0.28	(-3.76-3.21)	0.876
Unknown	0.52	(-6.62-7.66)	0.886	2.82	(-4.44-10.09)	0.446
ECOG performance status						
0	Ref			Ref		
1	-3.10	(-6.48--0.27)	0.072	-3.65	(-7.13--0.16)	0.040
Unknown	-2.14	(-7.15-2.87)	0.402	-1.81	(-6.96-3.34)	0.490
Tumour characteristics						
T-stage						
In situ / T1	Ref			Ref		
T2	1.80	(-0.64-4.26)	0.149	2.35	(-0.30-5.00)	0.082
T3 / T4	3.79	(-1.43-9.01)	0.154	3.68	(-1.97-9.33)	0.201
Unknown	10.01	(-4.30-24.33)	0.170	15.43	(-7.10-37.97)	0.179
N-stage						
N0	Ref			Ref		
N+	-0.45	(-3.15-2.24)	0.742	-1.83	(5.75-2.09)	0.358
Unknown	-3.68	(-21.31-13.96)	0.682	-6.91	(-29.08-15.26)	0.540
Grade						
I	Ref			Ref		
II	0.18	(-3.21-3.56)	0.918	-0.76	(-4.27-2.75)	0.671
III	2.09	(-1.46-5.63)	0.248	1.19	(-2.64-5.02)	0.541
Unknown	2.43	(-2.91-7.77)	0.372	0.99	(-4.63-6.62)	0.729
Treatment						
Most extensive surgery**						
BCS	Ref			Ref		
Mastectomy	0.80	(-1.59-3.19)	0.511	-1.82	(-5.75-2.09)	0.520
Unknown	-2.90	(-20.46-14.64)	0.745	-2.26	(-24.61-20.10)	0.843
Most extensive axillary surgery						
SNLB	Ref			Ref		
ALND	1.07	(-1.75-3.90)	0.455	1.91	(-2.15-5.97)	0.356
Unknown	-1.71	(-12.10-8.67)	0.746	-3.18	(-14.41-8.06)	0.843
Radiotherapy						
No radiotherapy	Ref			Ref		
Radiotherapy	0.82	(-1.72-3.38)	0.523	1.26	(-2.36-4.87)	0.496
Unknown	-2.82	(-13.12-7.47)	0.591	-0.26	(-11.78-11.27)	0.965

Table 2. Change in physical parameters between one and two years after diagnosis (*continued*)

	univariate			adjusted*		
	Bèta	95% CI	p-value	Bèta	95% CI	***P*-value**
Chemotherapy						
No chemotherapy	Ref			Ref		
Chemotherapy	3.11	(0.68-5.55)	0.012	0.40	(-2.96-3.77)	0.813
Endocrine therapy						
Exemestane	Ref			Ref		
Tamoxifen	-2.08	(-4.46-0.28)	0.084	-2.44	(-4.89-0.02)	0.052
Physical activity						
Age-group						
< 60	Ref			-		
60-70	-1.03	(-3.89-1.82)	0.534	-		
≥ 70	-1.04	(-4.32-2.24)	0.438	-		

Physical functioning score calculated from the EORTC-QLQ C30 questionnaire and change in physical activity calculated in MET/hours per week from the EPIC questionnaire

* adjusted for age, number of comorbidities, BMI at T1, ECOG, T stage, N stage, grade, surgery, axillary surgery, radiotherapy, chemotherapy and endocrine therapy

** 1 patient who did not receive surgical treatment was excluded

Physical activity

Mean values for physical activity measured in MET hours/week at T0, T1 and T2 are shown in figure 3. Complementary to the previous physical functioning score, mean physical activity was significantly lower in the oldest age group in comparison to the younger age groups at all time points (p<0.001 at all time points). Patients in all age groups showed a strong decline in physical activity two years after diagnosis (T2) compared to physical activity levels prior to diagnosis (T0) (P=0.002 for age group < 60 years, P=0.003 for age group 60-70, P=0.002 for age group ≥ 70). Change in physical activity over time was not significantly different between age groups.

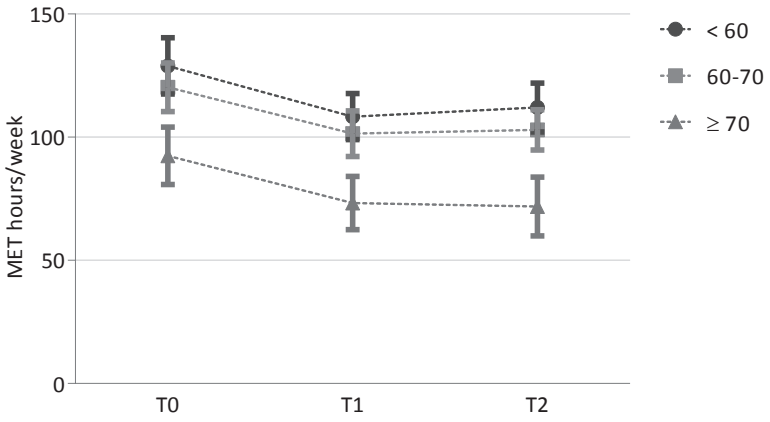

Figure 3: Mean physical activity in different age groups

T0: at time of diagnosis; T1: one year after diagnosis; T2: two years after diagnosis. Mean physical activity was calculated from the EPIC physical activity questionnaire.

Age above 70 years was not predictive for change in physical activity between T2 and T1 in univariate regression analysis compared to the youngest age group (bèta -1.04, 95% CI -4.32-2.24, P=0.438, table 2). In addition, no other patient, tumour or treatment characteristics were predictive for change in physical activity.

DISCUSSION

This study has shown that patients aged over 70 years treated with adjuvant hormonal therapy after breast cancer surgery showed significantly stronger decline in physical functioning between one and two years after diagnosis compared to their younger counterparts. Furthermore, we observed a decrease in physical activity level two years after diagnosis compared to prediagnostic physical activity among postmenopausal patients with breast cancer.

Our findings are in line with previous studies that examined physical activity among patients with breast cancer and reported a strong decline in physical activity immediately after diagnosis.[16-19] Only one study has examined physical recovery after surgery. The authors retrospectively assessed physical activity measured in leisure MET hours/week before diagnosis, during treatment and one year after diagnosis in a population based cohort study among primary breast cancer patients aged 50-75 years. After an initial decrease in physical activity during treatment, physical activity increased towards prediagnostic value one year after surgery and age was associated with decrease in physical activity one year after surgery.[17] Although exact time points between the studies differ, there is a similar pattern of initial decrease followed by subsequent increase of physical activity among all patients with breast cancer. In addition, the CALGB 49907, a randomized controlled trial and the CALGB 369901, a prospective cohort study, assessed physical functioning among older women treated with chemotherapy. In both studies, physical functioning improved in the first twelve months. However, in line with our findings, patients experienced decline in physical functioning from one to two years after diagnosis.[20,21] Figure 2 and figure 3 show a similar pattern for physical functioning and physical activity across the age groups between one and two years after, suggesting that there is a relation between the two parameters. A possible explanation for the observed decline in physical functioning in the oldest patients may be that functional decline in the older patient with breast cancer could be part of biological aging. This study had no control group of non-cancer subjects with similar age distribution. Therefore we were unable to distinguish the impact of cancer and treatment on physical functioning from age related deterioration. Two previous studies compared physical functioning in patients with cancer and a control group without cancer. Arndt et al. compared physical functioning from the EORTC QLQ C-30 questionnaire of breast cancer patients one year after diagnosis with a control population. They found a difference

in younger breast cancer patients, but not in older patients (70-80 years).[22] Unfortunately, they did not report levels of physical functioning before diagnosis. Kroenke et al. compared physical functioning in the Nurses' Health Study before and after diagnosis. Functional decline among older women without breast cancer was half of that of older women with breast cancer.[23] They used a relatively young population, with a reported upper age limit of 72 years. In this breast cancer population, 68% used hormonal therapy and 20% used chemotherapy. Overall, functional decline in older patients with breast cancer is closely related to age. However, cancer and cancer therapy probably have impact on physical functioning as is shown in the study by Kroenke and might accelerate decline in physical functioning.

Previous studies described a significant reduction in physical functioning during and after chemotherapy among patients with breast cancer.[24-26] In our study, there was an imbalance in the proportion of patients receiving adjuvant chemotherapy between the age groups as 74 % of the youngest patients received chemotherapy and none of the older patients received chemotherapy. This might impact the level of physical functioning as measured one year after diagnosis and change in functioning from one to two years after diagnosis. However, in the multivariable model where chemotherapy was included as a covariate, older age remained an independent prognostic factor for physical decline. Furthermore, older patients were less frequently assigned to the tamoxifen treatment arm. This could be the result of randomization but we cannot rule out that there is selective loss to follow up among the older patients in the tamoxifen arm.

BMI was not predictive for change in physical functioning after surgery. This is an interesting finding, as BMI is associated with poor physical activity in patients with breast cancer [18]. However, we did observe a lower mean physical activity level among patients with obesity although this level did not change significantly over time. Additionally, to our surprise, the number of comorbidities did not influence change in physical functioning. In contradiction to results in previous studies, patients with a higher number of comorbidities did not report lower mean levels of physical functioning.[5,24] Probably this is due to selection of patients in our study: only patients with a good ECOG performance score were included. This selection resulted in lower numbers of comorbidities in the patient population compared to the general population.[27] As expected, increased ECOG performance status was predictive for decline in physical functioning independent of other patient characteristics. The performance status may therefore be a useful clinical tool to detect patients at risk for physical decline after breast cancer diagnosis. However, a previous study has shown that the comprehensive geriatric assessment is a better predictor for physical functioning than the ECOG performance score in older patients.[28] In addition, the geriatric assessment is able to identify areas of vulnerability that would not be identified by routine history and physical examination.[29] As it is able to distinguish frail older patients from fit older patients, it is

likely to be a better predictor than just chronological age for decline in physical functioning as well. Currently, the International Society for Geriatric Oncology (SIOG) advice to perform a geriatric assessment in all older patients with cancer.[30]

Although not statistically significant, there was a trend for decreased physical functioning among patients allocated to the tamoxifen-exemestane treatment arm. This could not be explained by adverse events: the TEAM trial found significantly more musculoskeletal adverse events as they occurred more frequently in the exemestane treatment arm. No other adverse events associated with physical limitations were more frequently seen in the tamoxifen group.[11] The major strength of this study is the prospective design. We were able to prospectively collect reliable and well-registered data that made our study less subject to recall bias. Physical functioning was measured with two different validated questionnaires to increase the reliability of our findings. To our knowledge, this is the first study on physical functioning in older patients with breast cancer with a follow up of two years. We hereby provide further insight into recovery of physical functioning in the course of time. Furthermore, our study had no upper age limit, providing us with an unique opportunity to study older patients and examine the effect of age on physical activity and physical functioning.

However, this study was subject to several limitations as well. Most importantly, the TEAM trial only included patients with a low ECOG performance score. This led to inclusion of relatively fit older adults. Also, older patients included in the TEAM study had a high socioeconomic status and a low comorbidity burden in comparison with the age matched general population.[31] Due to this selection, the effect of age on decline in physical functioning could be underestimated when findings are extrapolated to the general population. Furthermore, although post-diagnostic physical functioning and physical activity were examined prospectively, levels of physical activity before diagnosis were assessed retrospectively. Although the EPIC questionnaire is validated for prospective follow up, it is not validated to assess physical activity retrospectively and it could therefore be subject to recall bias. However, it is not likely that the effect of recall bias differed between age groups. In addition, no data on physical functioning before diagnosis was available and therefore it is not possible to assess change from diagnosis to one year after diagnosis. Physical parameters could be affected by recurrence of disease. In this study, the number of patients who experienced a recurrence was low (n=9) and divided equally among all age groups. At last, we performed an additional analysis which showed that actual hours of activity corresponded well to physical activity calculated in MET hours.

It is important to prevent worsening of physical functioning in the older patients as it could interfere with independent living. This stresses the need for further research into the effect of intervention programs to prevent loss of functioning during hormonal treatment among

older patients with breast cancer. A multitude of randomized controlled trials on the effect of exercise on quality of life in patients with cancer have been performed in the last decade. A recent meta-analysis evaluated exercise intervention among post treatment cancer survivors. In the breast cancer subgroup analysis they did found an improvement in overall health related quality of life at varying time points (12 weeks, 6 months). No sustainable effect of exercise on physical functioning was observed.[32] Unfortunately, this meta-analysis did not perform age-specific subgroup analyses. Most of the included trials focused on exercise interventions in younger patients and may not be suitable for older patients. Morey et al. conducted a randomized controlled trial among older long term cancer survivors (> 65 years) examining the effect of a home based tailored programme promoting exercise and healthy diet. At twelve months follow up, they found an increase of physical functioning and overall quality of life in the intervention group compared to the control group.[33] This suggests that tailored exercise programmes for older patients with breast cancer might be effective.

With regard to the expanding aging population, the increasing number of older patients with breast cancer and the continuously improving breast cancer treatments, more research is required to evaluate and improve long term physical functioning in older patients with breast cancer. Unfortunately, older adults are generally underrepresented in clinical trials.[34] Participating older patients are relatively healthy compared to the general population. Consequently, trial results cannot be extrapolated to the general older breast cancer population.[31] Furthermore, few studies investigate functional status and quality of life. These endpoints might be particularly relevant for older patients with breast cancer.[35,36] Prospective studies that measure physical functioning before and after treatment are needed to evaluate change in physical functioning in relation to treatment.

Conclusion

In contrary to younger patients, patients aged over 70 years treated with breast surgery and adjuvant hormonal therapy did not improve in physical functioning between one and two years after diagnosis to the same extent as younger patients. With respect to our aging breast cancer population, more research is needed to clarify the interaction of physical functioning, breast cancer and the ageing process.

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