

High risk of recurrence up to 30 years after diagnosis among breast cancer patients aged <45 years

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INTRODUCTION

In recent years, the incidence of breast cancer (BC) among young women has increased in several Western countries. Compared to older women with BC, young women have more aggressive biological characteristics, higher stage at diagnosis, and lower survival rates. Except for cancers that arise in individuals with a high genetic risk, BC occurring at a young age is not a well understood epidemiological situation.

We constituted a population-based cohort of BC patients aged less than 45 years from the Geneva Cancer Registry with the aim of investigating patient, tumour and treatment characteristics and long-term health outcomes in these young adults.

OBJECTIVES

We evaluated the risk of local or distant BC recurrence as a first event in women aged <45 years and their survival up to 30 years after diagnosis.

METHODS

Between 1970 and 2012, 1'586 women were identified as resident in the canton of Geneva, Switzerland and diagnosed with a primary invasive non-metastatic (M0) breast cancer at the age of 45 years or less. From the pathological and medical files, we collected data on numerous variables including the social environment, family history, fertility and pregnancies. Women were followed up for local and distant recurrences, second cancer occurrence or death up to 31/12/2015. Cumulative incidence was estimated for local and distant recurrences in a competing risks framework which considered second cancer and deaths (from BC or other causes) as competing events. Analyses were stratified by 2 age groups: women < 40 years of age and women 40 years or older. We used the Kaplan-Meier method to estimate overall and BC specific survival by age group and the log-rank test to compare the estimates between the 2 groups.

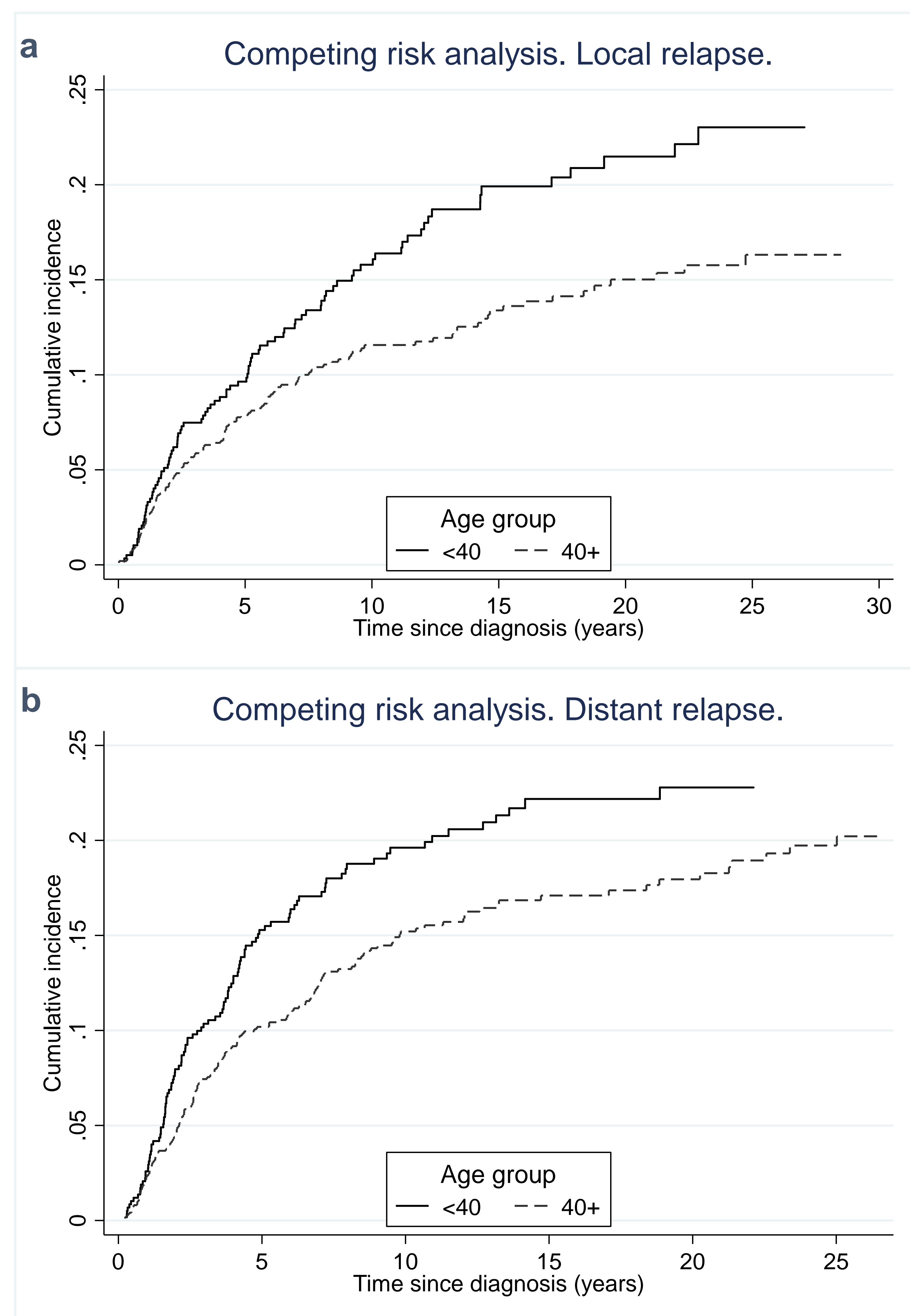
Table 1. Patient and tumour characteristics by age group

	<40		40-45		Total	
	N	%	N	%	N	%
Social class						
high	80	13.5	172	17.3	252	15.9
medium	262	44.2	422	42.5	684	43.1
low	203	34.2	307	30.9	510	32.2
unknown	48	8.1	92	9.3	140	8.8
Nationality						
Switzerland	350	59.0	650	65.5	1000	63.1
Europe	182	30.7	280	28.2	462	29.1
Asia, Africa & Oceania	43	7.3	38	3.8	81	5.1
America	18	3.0	25	2.5	43	2.7
Stage						
1	182	30.7	336	33.8	518	32.7
2	287	48.4	468	47.1	755	47.6
3	64	10.8	100	10.1	164	10.3
Missing	60	10.1	89	8.96	149	9.4
Grade (since 1986)						
Well	51	12.8	141	19.9	192	17.3
Moderately	172	43.1	326	46	498	45
Few/not	152	38.1	191	27	343	31
Unknown	24	6.0	50	7.1	74	6.7
Molecular subtype (since 2001)						
Luminal A	60	30.2	129	36.4	189	32.8
Luminal B	91	45.7	125	35.3	216	37.5
Her2 enriched	16	8.0	17	4.8	33	5.7
Triple neg	32	16.1	28	7.9	60	10.4
Missing	23	13.9	55	15.5	78	13.5

RESULTS

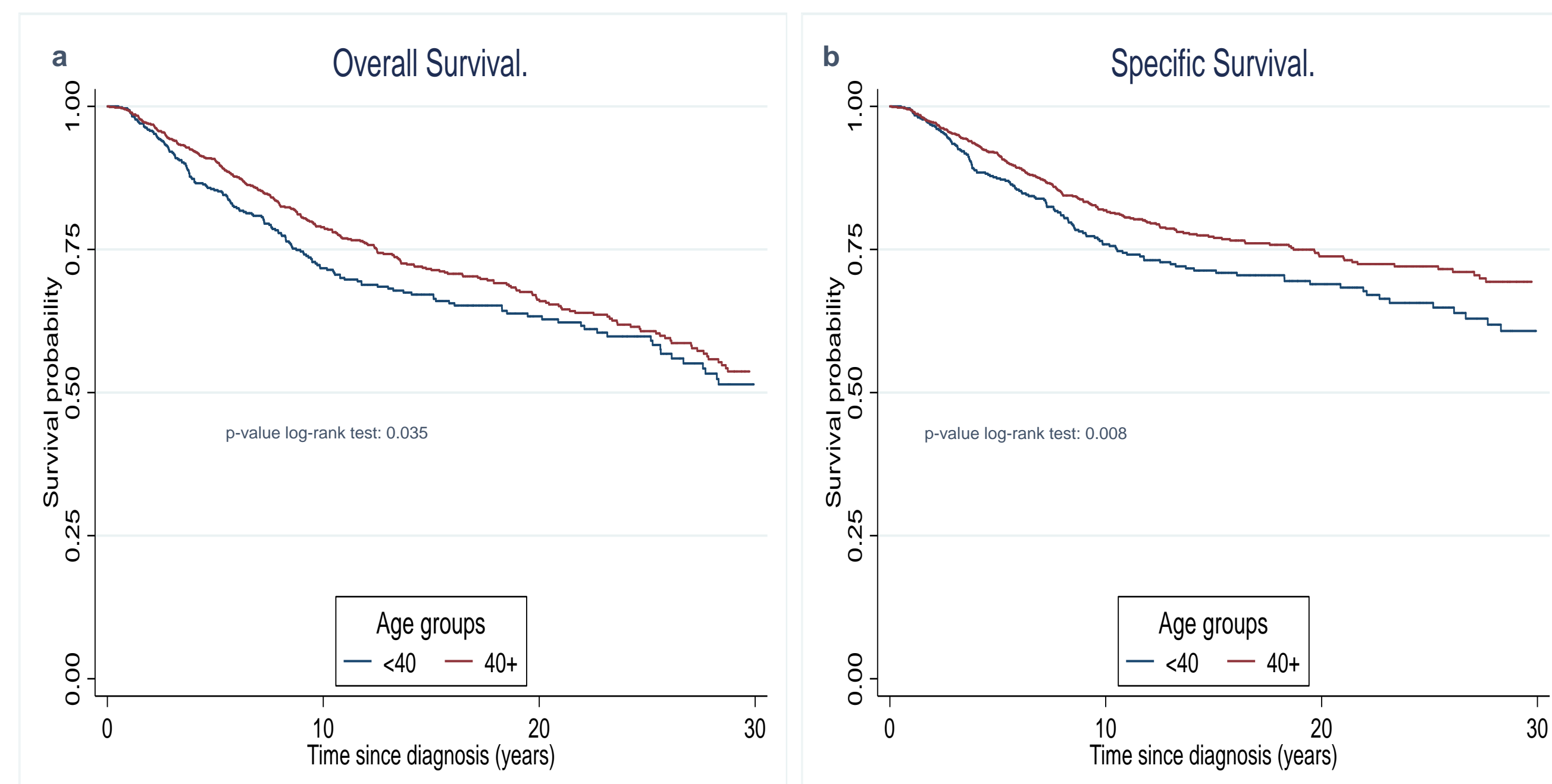
BC was diagnosed before the age of 40 years in 593 women (37.4%), and between 40 and 45 years in 993 women (62.6%). Compared with the older age group, patients who were younger than 40 years were more often diagnosed with a poorly differentiated tumour and less often with a luminal A molecular subtype (Table 1). No differences were found by stage at diagnosis, type of surgery or receipt of radiotherapy. At the end of the follow-up (median: 10.2 years), 16.7% of the women (N=265) developed a local recurrence and 25.4% (N=403) developed a distant metastasis; the majority (N=1'051, 66.3%) did not have a recurrences.

Figure 1. Probability of local (a) or distant recurrence (b) by age group.



474 (29.9%) women died during the study period, 347 (73.2%) from BC. The competing risk analyses found that recurrences occurred throughout the follow-up period. The risk of local recurrence after 10 and 25 years was 16% and 22% respectively for younger women, and 11% and 16% for women aged ≥ 40 years. For distant recurrence as a first event the risk was already almost 19% at 10 years for women <40 years and 15% for older women. At 25 years, it was 23% and 19% respectively (Figure 1). Overall and BC specific survival differed significantly among the two age groups, with patients <40 years old showing a survival of 87% at 5 years and of 76% at 10 years, compared to 92% and 82%, respectively for women ≥ 40 years old (Figure 2).

Figure 2. Overall (a) and breast cancer specific (b) survival by age group



CONCLUSIONS

BC patients aged <45 years were at risk of local and distant recurrence throughout 30 years of follow-up. Women <40 years had a higher risk of recurrence and worse survival than women ≥ 40 years. Further study of systemic treatment and adherence rates is planned. Recognition of this high long term risk in young BC patients can help women and their health care professionals with decisions on treatment and follow-up.