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Factors Associated with Cardiovascular Risk Factors Among Breast Cancer Patients

Shridevi Subramaniam[1], Hafizah Zaharah[2], Nur Aishah Taib[3], Ros Suzanna Bustamam[4], Cheng-Har Yip[5], Nirmala Bhoo-Pathy[6]

[1]Centre of Clinical Epidemiology, Institute of Clinical Research, National Institutes of Health (NIH), Malaysia
[2]Department of Radiotherapy & Oncology, National Cancer Institute, Malaysia.
[3]Department of Surgery, Faculty of Medicine, University of Malaya, Malaysia
[4]Department of Radiotherapy and Oncology, Hospital Kuala Lumpur, Malaysia
[5]Subang Jaya Medical Centre, Malaysia
[6]Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia

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INTRODUCTION

Cardiovascular disease (CVD) is increasingly becoming a concern in breast cancer survivors (1). Factors associated with CVD risk factors were determined among breast cancer patients

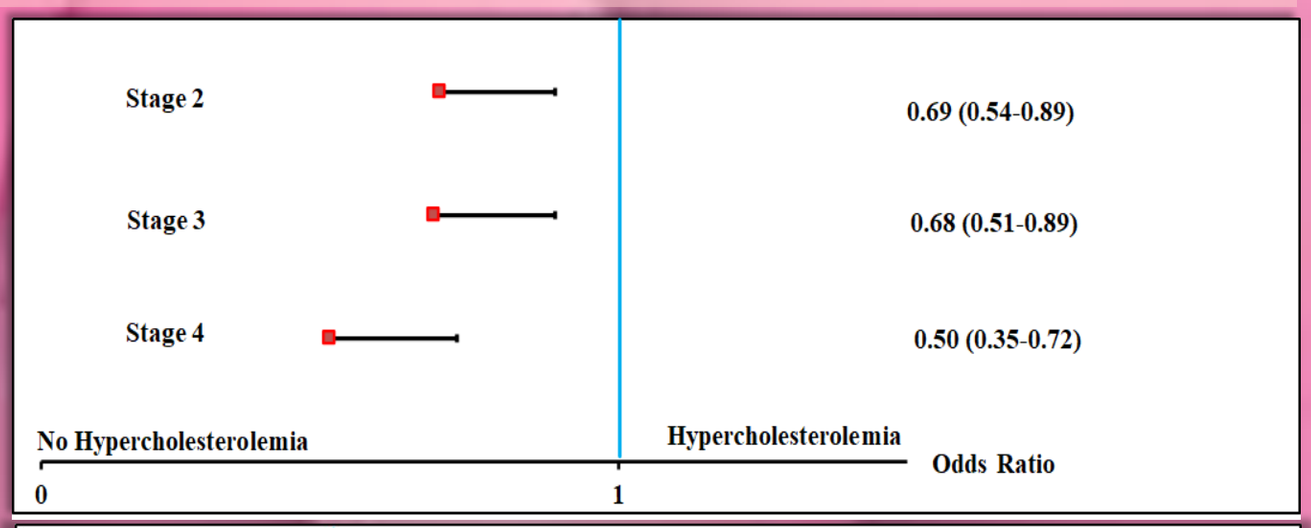
METHOD

- Total of 2127 women newly diagnosed with breast cancer were prospectively recruited from four tertiary hospitals in Malaysia
- Demographic and medical data were collected through interviews and verified with medical records.
- Height, weight, blood pressure, serum glucose, and lipid profiles were measured.
- Multivariable logistic regression analysis was conducted to determine factors independently associated with risk factors of CVD (hypertension, diabetes mellitus, obesity, hypercholesterolemia and low level of high-density lipoproteins (HDL)).

RESULTS

- Median age at diagnosis was 54 years (interquartile range: 45-62 years)
- Increasing age and Indian ethnicity were independently associated with most of the CVD risk factors.
- Breast cancer patients with higher cancer stages were significantly less likely to have hypercholesterolemia, where an inverse linear association was observed; p for trend = 0.004.
- Patients presenting with de novo metastatic breast cancer for instance were 50% less likely to have hypercholesterolemia compared to women presenting with stage I breast cancer (OR: 0.50, 95%CI: 0.35-0.72).
- Likewise, women with stage IV breast cancer were significantly more likely to have low HDL levels than women with early breast cancer (OR: 1.88, 95%CI: 1.24-2.84; p for trend = 0.004).
- De novo metastatic disease and ER positive breast cancers were independently associated with presence of multiple (clustering) CVD risk factors at baseline.

	Overall	Hypertension	Diabetes mellitus	Obesity	Low HDL	Hypercholesterolemia	>=2 CVD risk factors
	N (%)	OR (95%CI)[b]	OR (95%CI)[c]	OR (95%CI)[d]	OR (95%CI)[e]	OR (95%CI)[f]	OR (95%CI)[g]
Age							
<40	230 (10.8)	0.04 (0.03-0.06)	0.04 (0.01-0.09)	1.01 (0.63-1.62)	1.26 (0.83-1.91)	0.25 (0.17-0.36)	0.16 (0.10-0.27)
40-59	566 (26.6)	0.10 (0.07-0.13)	0.16 (0.11-0.25)	1.08 (0.74-1.59)	1.16 (0.84-1.60)	0.46 (0.34-0.60)	0.33 (0.23-0.47)
60-64	943 (44.3)	0.33 (0.25-0.44)	0.55 (0.41-0.73)	1.54 (1.09-2.16)	1.03 (0.77-1.37)	0.90 (0.70-1.16)	0.73 (0.54-0.98)
=65	388 (18.2)	1.00	1.00	1.00	1.00	1.00	1.00
Ethnicity							
Malay	795 (37.4)	1.60 (1.23-2.07)	2.05 (1.50-2.82)	4.34 (3.09-6.09)	1.29 (0.98-1.71)	1.41 (1.11-1.80)	2.17 (1.62-2.90)
Chinese	1019 (47.9)	1.00	1.00	1.00	1.00	1.00	1.00
Indian	270 (12.7)	1.58 (1.14-2.19)	4.13 (2.87-5.95)	3.39 (2.28-5.03)	2.12 (1.51-2.97)	1.27 (0.94-1.72)	2.90 (2.03-4.15)
Others	43 (2.0)	1.47 (0.72-2.97)	1.32 (0.54-3.26)	1.83 (0.74-4.56)	1.88 (0.88-4.02)	1.27 (0.66-2.45)	1.71 (0.75-3.86)
Stage							
I	469 (22.4)	1.00	1.00	1.00	1.00	1.00	1.00
II	812 (38.9)	1.07 (0.81-1.40)	1.08 (0.75-1.56)	1.08 (0.77-1.52)	1.03 (0.77-1.37)	0.69 (0.54-0.89)	1.04 (0.76-1.43)
III	583 (27.9)	1.05 (0.78-1.41)	1.11 (0.75-1.64)	1.39 (0.97-1.99)	1.34 (0.98-1.83)	0.68 (0.51-0.89)	1.31 (0.93-1.84)
IV	226 (10.8)	0.99 (0.67-1.45)	1.12 (0.69-1.81)	0.94 (0.58-1.53)	1.88 (1.24-2.84)	0.50 (0.35-0.72)	1.81 (1.16-2.83)
Grade							
Good	223 (11.9)	1.00	1.00	1.00	1.00	1.00	1.00
Moderate	920 (49.2)	1.07 (0.76-1.50)	0.85 (0.57-1.26)	0.92 (0.62-1.35)	1.00 (0.70-1.42)	1.02 (0.75-1.39)	0.96 (0.66-1.40)
Poor	727 (38.9)	1.07 (0.75-1.53)	1.01 (0.67-1.54)	1.00 (0.66-1.51)	1.05 (0.72-1.53)	1.17 (0.84-1.63)	1.13 (0.76-1.68)
ER status							
Positive	620 (30.5)	1.25 (0.99-1.57)	1.12 (0.84-1.49)	1.30 (0.99-1.72)	1.45 (1.13-1.86)	1.01 (0.82-1.25)	1.37 (1.05-1.79)
Negative	1415 (69.5)	1.00	1.00	1.00	1.00	1.00	1.00
HER2 status							
Positive	707 (35.9)	0.90 (0.72-1.12)	1.06 (0.82-1.39)	0.79 (0.61-1.02)	0.97 (0.77-1.23)	0.92 (0.75-1.13)	0.98 (0.77-1.26)
Negative	1264 (6 4.1)	1.00	1.00	1.00	1.00	1.00	1.00



* Hypercholesterolemia defined as serum total cholesterol level >=5.2mmol/L
**Low HDL serum HDL <1.3mmol/L
***Stage I as reference

DISSCUSSION/CONCLUSION

- Advanced cancer stage was associated with low HDL and cholesterol.
- Previous study reported that low-HDL-cholesterol levels among breast cancer patients were associated with more aggressive tumour characteristics and worse survival (2). While the discussion that CVD and cancer share similar pathophysiological pathways has been ongoing, further clinical research is needed to fully elucidate the association between serum lipid levels and carcinogenesis.

REFERENCES

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