

# Clinicopathological correlates in a cohort of Hong Kong breast cancer patients presenting with screen-detected or symptomatic disease

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**Objectives** To examine the differences in breast cancer presentation by analysing our recent experience in the diagnosis and management of breast cancer patients.

**Design** Retrospective study.

**Setting** Private hospital, Hong Kong.

**Patients** Consecutive patients (702 in all) referred to the hospital with newly diagnosed breast cancer over the 5-year period from 2001 to 2006.

**Main outcome measures** Methods of detection; tumour size, lymph node involvement, and surgical treatment modalities.

**Results** Over 80% of these patients presented following self-discovery of a breast mass, whereas routine mammography accounted for only 8%. Screen-detected tumours were smaller than self-discovered tumours (2.02 vs 2.35 cm,  $P<0.03$ ), and mastectomy rates were lower in mammogram-screened patients than in self-discovered disease (35% vs 50%;  $P=0.03$ ). In addition, self-detected tumours were significantly more likely to be associated with lymph node involvement than screen-detected tumours (38% vs 20%;  $P=0.007$ ), confirming a prognostic difference. These uncontrolled data should not be interpreted as proving either the efficacy or the cost-effectiveness of breast screening.

**Conclusion** The findings suggest a disturbingly low utilisation of mammography in Hong Kong patients, and raise the possibility of a more proactive public health approach to promote such screening for susceptible target groups.

## Introduction

Many randomised trials and epidemiologic analyses have examined the utility of mammographic screening and early detection.<sup>1,2</sup> Most conclude that mammography is effective,<sup>3-6</sup> but others dispute this conclusion.<sup>7,8</sup> In western countries with breast screening programmes, more than 50% of breast cancers are detected by routine mammography.<sup>9</sup> A recent overview of randomised studies confirmed a 20 to 25% (30-35% in 60- to 70-year-old patients) decrease in overall breast cancer mortality as a result of screening.<sup>10</sup> The same overview concluded that methodologic criticisms of the Swedish randomised mammography trials were misleading and scientifically unfounded. Moreover, compared with randomised studies of mammogram effectiveness within screened populations, case-control studies have suggested an even greater efficacy (about 50% mortality reduction) in subjects who comply with screening.<sup>11</sup> The American Cancer Society, the American College of Radiology, the American Medical Association, and the National Cancer Institute all recommend annual breast screening for women from the age of 40 years, whereas other health organisations make similar recommendations to those aged 50 years and older.<sup>12</sup> Thus, the present balance of global opinion favours the view that mammography, although controversial, is of proven benefit.<sup>13</sup>

However, to date the popularity of routine mammographic screening in western societies has not been replicated in Asian populations. According to a recent study of Hong Kong Chinese women, most had never heard of mammography; while of those who had heard of such screening, only 58% felt positively about it, citing doubtful benefits, lack of time, and financial issues.<sup>14</sup>

### Key words

Breast neoplasms; Breast self-examination; Mammography; Mass screening; Mastectomy, segmental

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Similarly, only 28% of attendees at a Hong Kong well woman clinic had ever had a mammogram.<sup>15</sup> One study of mammographic breast screening in Hong Kong women older than 40 years confirmed malignancy in only 0.26% of examinations, leading the authors to conclude that the value of screening was unproven in this subpopulation.<sup>16</sup> In contrast, a much larger randomised study of 166 600 Singaporean women detected 4.8 cancers per 1000 women screened, with the authors concluding that mammography was important for detecting early-stage cancers in Asian populations.<sup>17</sup> Some experts have argued that screening mammography in Asian populations is unlikely to have the same benefits in reducing breast cancer mortality rates as in the Caucasians, due in part to lower incidence rates in Asians<sup>18,19</sup> and in part to lower sensitivity of imaging in younger age-groups.<sup>20</sup> However, with the rising incidence of breast cancer in Hong Kong,<sup>21</sup> this rationale for a conservative approach could become less defensible.

Relatively few Asian studies have evaluated the impact of mammography on the characteristics of primary invasive cancers and the associated impact on local/regional management, especially the relative frequencies of breast-conserving therapy against mastectomy. One such study reported that screen-detected cancers were of lower overall grade, lower proliferation, and lower nodal stage, as well as less often being associated with p53 overexpression, neovascularisation, and chromosomal abnormalities,<sup>22</sup> which is consistent with earlier detection and therefore more curable. Here we examine the differences in breast cancer presentation among a cohort of 702 Hong Kong patients with mammogram-detected or self-discovered breast tumours.

## Methods

Records of 702 consecutive patients referred to the Hong Kong Sanatorium and Hospital with newly diagnosed breast cancer over a 5-year period from 2001 to 2006 were analysed retrospectively. Patients with secondary breast cancers and males were excluded. The methods of detection recorded in the database included screening mammography, screening ultrasound, clinical breast examination, breast self-examination, and self-discovery. Tumour size, lymph node involvement, and surgical treatment modalities were also recorded. Differences between the characteristics of self- and screen-detected tumours were then quantified using either Student's *t* test or Chi squared testing.

## Results

Approximately 83% (586/702) of all invasive breast cancers were self-detected, whereas only 8% (59/702) were mammographically detected (Fig 1). The remaining tumours were detected by non-mammographic screening modalities (defined here as either clinical

### 透過乳腺X射綫照相檢查而求診與自己發現病徵而求診的香港乳癌病人的臨床病理關連

**目的** 透過分析近年診斷和治療乳癌病人的經驗，研究乳癌發病情況的差異。

**設計** 回顧研究。

**安排** 香港一所私家醫院。

**患者** 2001至2006年間，共702宗被診斷患上乳癌而轉介到此醫院的連續新症。

**主要結果測量** 檢查方法；腫瘤體積、涉及淋巴結的情況和手術治療的形式。

**結果** 參與研究的病人中，超過八成是自行發現乳房硬塊後求診，而接受定期乳腺X射綫照相檢查後求診的病人只佔8%。照相檢查後求診的病人，其腫瘤體積比自行發現乳房硬塊後求診的病人細小（2.02 cm比2.35 cm， $P<0.03$ ），而須要切除乳房的比率亦較低（35%比50%， $P=0.03$ ）。此外，自行發現乳房硬塊後求診病人的腫瘤，明顯地有更大可能涉及淋巴結（38%比20%， $P=0.007$ ），可確定預後差別。但這些沒有對照的數據不應作為確定乳腺X射綫照相檢查的效用和成本效益的證明。

**結論** 是次研究顯示香港市民使用乳腺X射綫照相檢查的比率偏低，因此須要對容易發病的人士更主動推廣這種檢查方法。

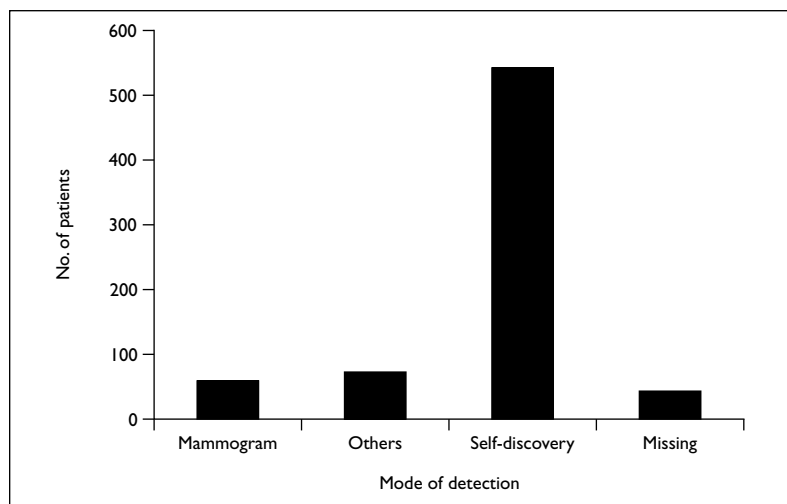


FIG 1. Frequency of detection modes for invasive breast cancers in 702 Hong Kong patients

“Others” denotes non-mammographic screening modalities, ie ultrasonography, clinical breast examination, and breast self-examination; “missing” denotes no relevant data recorded

breast examination, breast self-examination, and/or ultrasonography) or by unknown means. Hence, in this Hong Kong patient population, an overwhelming

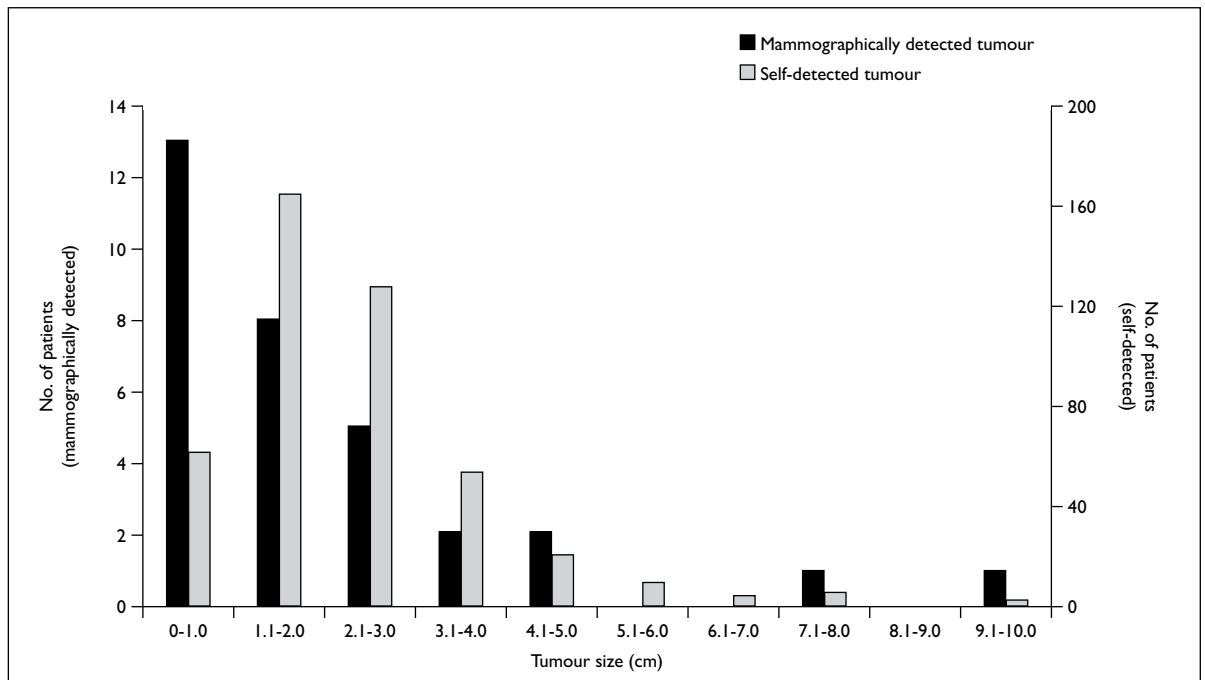


FIG 2. Distribution of tumour sizes in mammographically detected and self-detected tumours

TABLE. Mean tumour size, mastectomy rates, breast conservation surgery rates and patient numbers and percentages with axillary lymph node involvement in mammogram-detected tumours and self-detected tumours

Tumour/treatment characteristic	Mammogram-detected tumours	Self-detected tumours	P value
Mean size (cm)	2.02	2.35	<0.03*
No. having mastectomy	18 (35%)	254 (50%)	0.03†
No. having breast-conserving surgery	34 (65%)	250 (50%)	
No. with lymph node not involved	45 (80%)	333 (62%)	0.007†
No. with lymph node involved	11 (20%)	204 (38%)	

\* Student's *t* test  
 † Chi squared test

majority of tumours were detected by symptoms rather than by screening.

Mammographically detected tumours were significantly smaller than self-detected tumours (mean size, 2.02 cm vs 2.35 cm, respectively;  $P < 0.03$ ) [Fig 2, Table]. Self-detected invasive breast cancers were more often associated with lymph node involvement than were those detected mammographically (38% vs 20%; Chi squared=7.385,  $P = 0.007$ ) [Table]. As also shown in the Table, mammographically detected tumours were significantly more often treated with breast-conserving surgery (65%) than mastectomy (35%) [ $P = 0.03$ ].

### Discussion

The central finding of the present study is that only a small minority of breast tumours were detected mammographically in this Hong Kong patient population,

which is consistent with conservative government policies relating to breast screening. Although retrospective and uncontrolled, our data indicate that breast tumours detected mammographically are smaller, less likely to involve lymph nodes, and be more amenable to breast-conserving surgery.

In this context, one Hong Kong study examining the knowledge of breast cancer in local women found that almost 50% had the misconception that mastectomy was the only curative treatment. However, when more information was provided, preference for breast-conserving therapy rose from 29 to 49% in all age-groups.<sup>14</sup> Nevertheless, many women (42%) in the aforementioned study—despite being correctly educated about the benefits of screening mammograms—elected not to participate in yearly breast screening examinations, quoting lack of time and cost as major reasons. In our study, older age-groups underutilised mammographic

services to a greater extent than younger women (data not shown), which should be of concern, given that the former appear to derive the most benefit from such screening.<sup>10</sup>

The effectiveness or otherwise of screening mammography in predominantly Chinese populations has not been rigorously assessed in urbanising regions with sharply rising breast cancer incidences. The benefits of mammographic screening must be weighed against its harm (costs, anxiety generation, false positives, and perhaps second cancers) that may occur. In addition, recent debate has addressed whether overdiagnosis and overtreatment of early breast cancer could represent a hidden cost of screening mammography.<sup>23</sup> These concerns over mammographic cost-effectiveness have been magnified by a recent American report suggesting a remarkable drop in breast cancer incidence associated with reduced utilisation of hormone replacement therapy.<sup>24</sup>

Interpretation of the present study is subject to several important limitations. First, the data are uncontrolled and retrospective, thus preventing any firm conclusion as to the efficacy of screening. Second, many

potentially important data elements and/or confounders (eg socio-economic data, long-term mortality, hospital stays, catchment population, surgeon's operative preference) are either lacking or beyond the scope of this report. Third, the statistical analysis is restricted to a much smaller number of patients than is customarily required for assessment of screening outcomes.

Despite these caveats, the present study highlights a very low uptake of breast screening in Hong Kong international standards. Whether this reflects low acceptability of the intervention,<sup>14</sup> low compliance for other reasons,<sup>17</sup> or inadequate public education in screening is not discernible from this study. Nonetheless, we caution that breast cancer survival outcomes in Hong Kong could be negatively impacted by long-term continuation of this evidently conservative public attitude towards screening, and encourage ongoing open and critical assessment of this public health issue.

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