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## Risk of breast cancer in women with palpable breast cysts

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## Introduction

Palpable breast cysts (also known as cystic disease of the breast) are common in women in industrialised countries. Previous studies of the relationship between palpable breast cysts and breast cancer have shown conflicting results, but many have shown an elevated risk. There are two types of breast cyst, defined according to the biochemical properties of the aspirate. Previous studies have suggested that women with type I cysts (characterised by an aspirate with an electrolyte composition similar to that of intracellular fluid) are at an increased risk of breast cancer, compared with women with type II cysts (with an aspirate having an electrolyte composition similar to that of plasma).

## Aims

To assess prospectively whether women with palpable breast cysts are at a higher risk of breast cancer than women in the general population and whether particular groups of women with cysts are at a higher risk of breast cancer than others.

## Comments

This article raises some interesting issues. The study described compares breast cancers diagnosed in a patient series with those expected on the basis of the general population, therefore the authors are not in a position to control for confounding. Reproductive and hormonal factors relating to breast cancer risk, such as parity, menopausal status and exogenous hormone exposure may also be associated with the development of palpable breast cysts. The high risk of breast cancer in the year following cyst aspiration is also of concern. Nonetheless, the relatively consistent findings of an elevated risk of breast cancer in women with palpable breast cysts warrants further attention and replication in larger studies able to control for confounding.

# Methods

A total of 1374 women with palpable breast cysts attending the Edinburgh Breast Unit from 1981 to 1987 were involved in the study. These patients underwent clinical assessment and mammography before cyst aspiration, and attended the unit until they had no further palpable cysts. All fluids collected were analysed for sodium and potassium content by flame photometry. Cysts were classified as type I if the sodium/potassium ratio in the cyst fluid was less than 3, or type II if the sodium/potassium ratio was 3 or more. Women were followed for subsequent diagnosis of breast cancer up until January 1995, by data linkage with the cancer registry, hospital discharge, and death registration data held by the information and statistics division of the National Health Service of Scotland. The observed numbers of breast cancers in the women with palpable breast cysts was compared with that expected, based on the age-specific incidence of breast cancer in Scotland in 1988. Expected figures were multiplied by 1.15 to account for the higher socio-economic status, and related higher breast cancer incidence in the Lothian region.

# Results

After a median follow-up of 9.4 years, a total of 65 breast cancers were diagnosed in the study group. This resulted in a standardised incidence rate of breast cancer in women with palpable breast cysts of 2.81 (95% CI 2.17-3.59). The standardised incidence rate of breast cancer was highest in the first year following aspiration [7.02 (3.73-12.00)] and was 2.68 (1.84-3.76) after 5 years. The standardised incidence rate of developing breast cancer was highest in women under 45 [5.94 (2.97-10.63)], with a significant trend for decreasing relative incidence rate with age ( $P < 0.05$ ). Women older than 54 years had a standardised incidence rate of 1.73 (0.86-3.10). Neither age at aspiration nor number of cysts was related to breast cancer risk after adjustment for current age. The risk of breast cancer did not differ significantly according to cyst type; the rate ratio for type I cysts compared with type II cysts was 1.17 (0.69-1.99).

# Discussion

Studies that have examined the risk of breast cancer in women with breast cysts diagnosed mainly or exclusively by aspiration have all suggested that women with breast cysts are at a higher risk of breast cancer, compared to the general population. Breast cysts may contain high concentrations of hormones such as androsterone, epiandrosterone and oestrogen.

Although cancer rarely develops in cysts, they may be a marker of generalised increased epithelial activity within the breast that make it more prone to developing cancer. Most palpable breast cysts occur in women aged 40-50 years. It is unclear why women under 45 years with breast cysts had a particularly

high risk of breast cancer compared with older women with breast cysts, but this may be related to premenopausal hormone levels.

## References

1. Dixon JM, McDonald C, Elton RA, Miller WR, Miller WR : Risk of breast cancer in women with palpable breast cysts: a prospective study. *Lancet*. 1999, 353: 1742-1745.