death and/or a subsequent invasive breast cancer was also collected from the registry. Medium follow up time was 4.2 years with more than 14,400 person years observed. We found a good prognosis with more than 95% corrected survival after 10 years. The risk of a subsequent invasive cancer on either side was 5% during the follow up period. During the observed period, prognosis was steadily better in each interval studied (80–82, 83–85, 86–88, 89–92). The risk of dying in breast cancer was highest in the youngest and oldest agegroups, which is parallel to what earlier has been shown in patients with an invasive breast cancer. There was a relation between prognosis and if the women studied were in agegroups eligible for screening and living in a county where mammography screening was offered. The study results implies that the natural history of CIS is changing over time and that screening may have influenced this development.

PP-4-6 Germline Mutation at *BRCA1* Affects the Histoprognostic Grade in Hereditary Breast Cancer

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Histoprognostic grade is a determinant parameter to select the initial therapeutic strategy in breast cancer (BC). Our aim was to analyse the grade repartition in *BRCA1*-BC and to explore the connections between grade and the *BRCA1* gene function. We compared 27 *BRCA1*-BC from 14 families with 4461 cases from a registry and 242 sporadic cases, matching for grade, and constitutive elements, and then considered their repartition in families. We observed a prevalence of Grade 3 ($p < 0.0001$) in *BRCA1*-BC. This was attributed to nuclear polymorphism ($p < 0.0001$), mitotic activity ($p < 0.0001$) and to tubular differentiation ($p = 0.0004$), implying that *BRCA1*-BC are highly proliferating tumors. Moreover it is suggested that grade segregates as a genetic trait within families ($p = 0.0015$), and this was attributed to the mitotic index only ($p = 0.0005$). Thus grade, through its components, could be interpreted as the morphological translation of the *BRCA1* germ-line mutation. Genotype-phenotype correlation may exist between the type of mutation and the aggressiveness of the disease. Such findings are bound to have important impact in the care management of hereditary breast cancer.

PP-4-7 Early Diagnosis of Inherited Breast Cancer

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We have decided on clinical criteria to define families at risk, and we have agreed with all major hospitals in Norway on a follow-up program for those at risk (J Cancer Care 2; 94, 1993). We have defined more than thousand women at risk, counselled them, and hereby report the results of the first rounds of examinations as noted in our files by March 28th 1996.

We have by now examined 1173 women aged 43.0 ± 11.3 years (mean ± SD) once or more. Of these, 603 aged 41.9 ± 10.5 have been followed for mean 1.8 years (range 1–5.6). Among these we have found 28 infiltrating cancers/cancers in situ in 26 women (2.2%). Stratified on age groups, pick-up rates were (given as number affected/number in group):

Age < 30	0/149	Age 50–59	6/198
Age 30–39	6/372	Age ≥ 60	5/ 98
Age 40–49	9/356		

So far, all but two were N0M0, the two had one affected axillary lymph node each. Mutation analysis in the families are being carried out.

We conclude that we have identified a high risk group where premenopausal breast cancer continues to occur, and that we have a program capable of demonstrating most cancers before spread. The follow-up will show the effect of the early treatment given.

Our program meets all ethical standards suggested.

PP-4-8 Secular Trends in Mortality in Four Large Kindreds with Hereditary Breast-Ovarian Cancer

E.T.M. Hille.

Abstract not available.

POSTER PRESENTATIONS

PP-4-9 Breast Cancer and In Vitro Fertilization

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Because of, the increased risk of breast cancer for infertile nulliparous women, the suspected promoter role of estradiol in mammary carcinogenesis, and the high frequency of ovulation inducer treatments, it was interesting to focus on the risk of breast cancer after such a treatment.

So, we reviewed 32 cases during a retrospective survey in ART (Assisted reproductive Techniques) centers in France. Because of the small sample size and the few cases published so far, no statistical study could be made. However, many observations may have gone unnoticed or were not published. However, two hypotheses can be proposed: (1) the facilitating role of stimulation on potential infra-clinical or undiagnosed cancers; The cases recorded in our study seem to support this hypothesis as the recent literature; (2) the initiation of new cancers.

Consequently, we propose: to establish a register for the follow-up of treated women to monitor the advent of new cancers; to increase the follow-up of patients with other associated risk factors.

PP-4-10 Ultrasound Guided Fine Needle Aspiration Biopsy (FNAB) for Detection of Axillary Node Metastases: A New Diagnostic Method

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The axillary lymph node status is still the most important prognostic indicator in breast cancer. This study was designed to evaluate a non-invasive method for axillary staging using ultrasonography alone and in combination with fine needle aspiration biopsy (FNAB) in 148 patients without palpable nodes with clinical examination. Node size and echo pattern were used as criterion for malignancy. Results of US and FNAB were compared with the histologic results of axillary dissection. Lymph node metastases were present in 62 axillas (41%). The sensitivity of ultrasonography was the highest (87%) when size (length > 5 mm) was used as criterion for malignancy, but specificity was rather low (56%). When nodes with a malignant pattern (echopoor or inhomogenous) were visualized, specificity was 95%. Ultrasound guided FNAB had a sensitivity of 80% and a specificity of 100% and detected metastases in 63% of node positive patients. It is concluded that FNAB is an easy, reliable and cheap method for identification of patients with positive nodes. In case of negative findings other non-invasive diagnostic procedures important to exclude lymph node metastases, like sentinel node mapping, could be performed.

PP-4-11 The Relationship between Early Life Experience and Risk for Breast Cancer in Premenopausal Women

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Objective: To explore the relationship between early life experience and risk for breast cancer, a case control study was conducted in Chongqing, China.

Methods: The cases (N = 153) were histologically diagnosed as having breast cancer in premenopausal women aged 24 to 49. Controls (N = 153) were randomly selected from healthy premenopausal women. A standardized questionnaire was used for face-to-face interview.

Results: Multiple logistic regression analysis indicated that: (1) Passive smoking and history of hospitalized diseases in childhood (age < 10) and youth (age 10–16) period were positively associated with high risk of breast cancer in their adulthood [odds ratio (OR) = 1.05; 95% confidence interval (CI) = 1.01–1.08 and OR = 2.46, CI = 1.10–5.52, respectively]. (2) Low body weight in childhood and poor family economic situation in youth were negatively associated with high risk of breast cancer [OR = 0.66, CI = 0.48–0.90; and OR = 0.45, CI = 0.31–0.67, respectively]. (3) In adulthood (age > 16), passive smoking at home was positively and low body weight was negatively associated with high risk of breast cancer [OR = 1.02, CI = 1.01–1.04; and OR = 0.67, CI = 0.47–0.95, respectively]. (4) Other significant risk factors were age at early menarche (OR = 0.85, CI = 0.74–0.99) and life stress at any age (OR = 2.33, CI = 1.14–4.74).

Conclusion: Our findings suggest that poor early life experience was independent risk factors for breast cancer in Chinese premenopausal women.

PP-4-12 Results of Mass Screening for Breast Cancer in Atomic Bomb Survivors Resident in Hiroshima

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As breast cancer has been found to develop at a higher-than-expected rate among atomic bomb survivors (ATS), mass screening for breast cancer has been carried out using inspection and palpation procedures since 1988 under the Atomic Bomb Survivors Medical Treatment Law. We report the results of this screening in Hiroshima city. During a 5 year period, examinees were increasing year by year, and amounted to 16,252, and the detection rate was 0.30%. This was higher as compared with that of non-exposed women over 50 years of age (0.13%). When ATS were divided into ATS within 2,000 m from ground zero, ATS beyond 2,000 m from ground zero and early entrants etc by exposure status, the detection rate was highest in ATS within 2,000 m from ground zero.

PP-4-13 Review of 260 Non Palpable Breast Lesions

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In our attempt to diagnose breast cancer as early as possible and to minimize biopsies of non malignant lesions we reviewed all 260 biopsies of NPBL, performed between October 1992 and October 1995, recruited outside any screening program.

Main indications for surgery were suspect microcalcifications (120), stellate (20) or ill-defined (32) lesions and 68 cases with non suspect radiologic features but with presence of risk factors, or on patient's demand.

Malignancy was detected in 40% (105), resulting in a benign to malignant ratio of 1.4:1. Microcalcifications were more likely to be associated with in situ carcinoma (62%) while stellate or ill-defined mass enclosed nearly half of all invasive cancers (44%).

When breast conservative treatment is considered, tumor-free margins are preferably obtained by the first excision, in which we succeeded in 48%. Presence of microcalcifications and carcinoma in situ were highly at risk. Overall, BCT could be preserved in 75% of all clinically occult DCIS and in 68% of invasive lesions.

PP-4-14 Stereotaxic Fine-Needle Aspiration Cytology in the Detection of Non Palpable Breast Cysts: An Alternative to Ultrasound Guidance

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We reported a retrospective analysis of 50 stereotactic-guided fine-needle aspirations for mammary nonpalpable cysts detected by mammography, registered between January 1990 and December 1995. During the same period 237 ultrasound guided cysts punctures were performed. The stereotactic method was indicated for round masses detected by inaugural screening mammography (23 cases), or increased of size (6 cases), or recently appeared (21 cases). The patients were aged 35 to 81 (average 58). 43 were postmenopausal, 14 of them had hormonal replacement therapy. In all cases, ultrasound guided puncture was an inadequate method: not any echographic abnormality (18 cases), deep lesions (26 cases), retroareolar masses (3 cases) and unsuccessful echoguided punctures (2 cases). The median size of opacities was 8.4 mm (4 to 15).

The stereotactic procedure is performed with a DMR unit (GE with stereotic II). A 21 gauge, 80 mm long needle is inserted and stereotaxic views are done to verify needle position. After aspiration, cystic fluid was always obtained; 33 opacities disappeared, 16 opacities decreased in size and 1 kept the same size but was of lower density. Cytologic examination prove benign cysts in all cases. There was not any complication, the follow-up did not reveal any abnormality.

This method is reliable for evaluation of nonpalpable mammographically detected opacity, especially for postmenopausal women with hormonal replacement therapy when ultrasonography is inefficient. The use of this technique spares the patient a surgical procedure. This method can permit women under menopausal hormone replacement therapy to continue the treatment.

PP-4-15 BRCA1 Gene Alterations in Sporadic Breast Cancer

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In western countries breast cancer is the most frequent malignancy in woman. There is a peak of incidence at age 55. A strong family history of breast cancer is the main risk factor related. Thus, considering that sporadic breast cancer accounts for 90% of all breast cancers, the identification of germline genetic alterations associated with this type of tumor could have a tremendous impact. We designed the present study, now under way, to detect morphologic alterations at BRCA1 gene in sporadic breast cancer. *Methods:* Between 1-2-95 and 31-1-96, we studied 105 patients with breast cancer, without family history of breast and ovarian cancer. The mean age was 55 years, and the median 53. The 17q21 region was studied for presence of loss of heterozigosity (LOH) using the polymorphic markers: D17S855, D17S1323, D17S1325 and D17S1327. Fifty three cases have been screened up to now. The mutational study in germline was performed by single-strand conformation polymorphism (SSCP) in peripheral blood lymphocytes DNA of the patients. *Results:* In seven patients (13.2%) we observed the presence of LOH in the 17q21 region. The PCR-SSCP analysis in the complete series shows 15 cases (14.2%) with mobility-shifts, all of them under further direct sequencing. *Conclusions:* The results of our study support the idea that the BRCA1 gene is a suppressor tumor gene and that the rate of aberrant fragment migration in our patients, considering their age, is relatively high.

PP-4-16 Mutational Study of BRCA1 Gene in Familial Breast Cancer

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Is accepted that the lifetime accumulative risk of breast cancer in BRCA1 mutation carriers is 85–90%, and about of 67% of families with breast cancer members, diagnosed under 45 years, are linked to BRCA1 gene. The present study try to ascertain the frequence of families with several affected member among our series of patients with breast cancer, as well as the presence of germline mutations of BRCA1 gene, and the haplotypes defined by markers of the 17q21 region. *Methods:* From the screening of 557 medical records of patients who underwent to mastectomy, we selected for interview 78 families (14%), with two or more members affected. For the haplotype study in 47 families, we used the following polymorphic markers: D17S855, D17S1323, D17S1325 and D17S1327. The analysis for mutation in the BRCA1 gene was performed in 65 familial patients by single-strand conformation polymorphism (SSCP). *Results:* Up to now, our results show that in 87% of families all members affected by breast cancer have the same haplotype and in 16% of them, the same haplotype is showed by patients and healthy relatives. By PCR-SSCP familial patients shows 30% of aberrant fragment migration (now under sequencing process), 85% are present in families with three or more affected members. *Conclusions:* Our rate of familial breast cancer is within the reported range. We also identified a risk population among the healthy members of our families. The probability to relate the disease to BRCA1 gene in families with only two cancer cases is low.

PP-4-17 Use of Positron Emission and Computed Tomography in Evaluation of Brachial Plexopathy in Breast Cancer Patients

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Brachial plexopathy (BP) is a significant cause of pain and disability in breast cancer patients. The anatomy of the plexus and its proximity to blood and lymphatic vessels makes this a difficult area to image accurately. 18-Fluoro-2-deoxyglucose (18-FDG) Positron Emission Tomography (PET) has previously been used to image primary and metastatic breast cancer (Wahl *et al* (1991). radiology, 179, 765–770). In this pilot study 16 breast cancer patients with symptoms/signs referrable to the brachial plexus were evaluated with 18-FDG PET. In 9 cases CT scanning was also performed.