

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 stereotactic II). A 21 gauge, 80 mm long needle is inserted and stereotactic 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 heterozygosity (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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It 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 frequency 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 referable to the brachial plexus were evaluated with 18-FDG PET. In 9 cases CT scanning was also performed.

Of the 16 patients referred for PET study, 12 had abnormal uptake of 18-FDG in the region of the symptomatic plexus. 3 patients had normal PET studies and one had increased FDG uptake in the chest wall that accounted for her axillary pain. CT scans were performed in 7 of the 12 patients who had positive brachial plexus PET studies; 5 of these were either normal or showed no clear evidence of recurrent disease, while 2 CTs demonstrated brachial plexus involvement. Regarding 2 of the 3 patients with normal PET studies, one had complete resolution of symptoms untreated whilst the other had cervical disc herniation on Magnetic Resonance Imaging (MRI). The third patient almost certainly had radiation-induced BP and had normal CT, MRI and PET studies. These data suggest that 18-FDG-PET scanning is a sensitive and specific technique for evaluation of patients with suspected metastatic BP, particularly if other imaging studies are normal. It may also be useful in distinguishing between radiation-induced and metastatic BP.

PP-4-18 **Ultrasound-Guided Localisation of Impalpable Breast Lesions**

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Impalpable lesions detected by mammography require accurate localisation before excision biopsy. This retrospective study assesses the efficacy of ultrasound-guided localisation in terms of successful localisation of lesions and their adequate excision. Between March 1989 and February 1996 148 patients with impalpable lesions easily visible on ultrasound underwent ultrasound-guided localisation. Localisation was performed using an Aloka SSD 620 with a 7.5 MHz linear array probe. The depth of the lesion below the skin and its diameter was recorded. The mean age of the patients was 58.7 years (range 27.4–80.4). The mean maximum diameter of lesion localised at ultrasound was 11.2 mm (range 3–30), compared to mean histological size of 12.6 mm (range 4–33). The mean maximum diameter of tissue removed was 57.5 mm (range 10–110). 65 specimens were weighed. The mean weight of all specimens was 37 g (range 2–101). 99 of the 148 ultrasound-localised biopsies (67%) were malignant. Excision was complete in 87 (88%) of the 99 malignant cases. Five patients had further excisions and seven proceeded to mastectomy. Well-defined impalpable lesions have been successfully localised using ultrasound. The procedure is simple, convenient and non-invasive.

PP-4-19 **Imaging of Tumours in Breast Cancer Patients with the Estrogen Receptor Specific Radioligand Z-[I-123]MIVE**

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Objective This study investigates the potential of the putative I-123-labelled estrogen receptor (ER) ligand cis-11 β -methoxy-17 α -iodovinylestradiol (Z-[I-123]MIVE) for ER imaging in women with primary or metastatic breast cancer.

Patients and methods For 11 women with primary and 14 women with recurrent or metastatic breast cancer scintigraphy was performed at several time points (up to 24 h) after i.v. injection of 150 MBq Z-[I-123]MIVE. The tumour-to-background uptake ratios were calculated from the images by the regions of interest technique.

Results Low lung uptake and rapid hepato-biliary excretion allowed early imaging of the thoracic region. Analysis of the abdominal region was impeded by bowel excretion. In 21 patients focal Z-[I-123]MIVE accumulation was detected in primary tumours, local recurrences or metastases. The tumour-to-background ratios increased over time. At 4–6 h p.i. the ratios were for tumours in the breast 1.2 to 3.2, lungs e.g. 3.5, liver 3.2, lymph nodes 3.6, sternum 2.2, os ilium 3.7, os pubis 9.7, and recurrence 2.8. In 8 patients a second Z-[I-123]MIVE scan was performed 2–3 weeks after initiation of tamoxifen treatment. Except for two patients with early progressive disease, tumour uptake of Z-[I-123]MIVE was blocked completely by the anti-estrogen. This indicates that Z-[I-123]MIVE uptake is indeed ER-mediated.

Conclusion Z-[I-123]MIVE accumulates specifically in primary tumours, recurrences and all metastases (bone, liver, lung, brain, and lymph nodes) of breast cancer.

PP-4-20 **Nonpalpable Opacities on Mammograms: Histopathological-Mammographic Correlations of 304 Cases**

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Nonpalpable opacities of the breast are found more frequently with the increasing number of mammography performed for clinical or screening purposes. The specificity of mammography is not very high and 50 to 70% of non palpable opacities are finally benign. The purpose of this study is to determine the influence of epidemiologic (patient age, family and personal history) and mammographic patterns on the rate of malignancy in nonpalpable breast opacities. During a 6 years period, 1097 nonpalpable lesions were biopsied after needle localization. We have found 793 clustered microcalcifications (72%) and 304 opacities (28%). These opacities, ranging in size from 3 to 40 mm (mean: 15 mm), were associated with microcalcifications in 100 cases (33%). The histological diagnosis is malignant in 126 cases (42%): 12 carcinomas in situ and 114 infiltrating cancers. The proportion of cancers varied according to age (< 50 years: 36%, > 50 years: 47%), mammographic patterns (circumscribed opacities: 11%, asymmetric densities: 26%, architectural distortion: 30% and spiculated/stellate opacities: 89%). No cancers are found among well-defined borders opacities. There is no significant difference in relation to the size or to family history. The rate of malignancy is influenced by personal history of breast cancer and associated microcalcifications. The authors will also present histological results with a special emphasis on the cancers (histological type, size, grade, node involvement, treatment).

PP-4-21 **Evaluation of the European Pilot Project in Navarra; A High Breast Cancer Detection Rate in the First Round and a Low Rate in the Second Round**

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The running European pilot project for breast cancer screening in Navarra (Spain) is evaluated, and the effects and costs of a screening programme in the long term are predicted.

A MISCAN simulation model was used, including the demographical, epidemiological and screening characteristics of Navarra. Expected results from MISCAN are compared to observed results from Navarra.

The observed detection rate of 5.9 in the first round was 18% higher than expected, while in the second round the observed rate of 3.0 is 12% lower than expected. Longer preclinical durations, lower sensitivity or less variability in preclinical duration cannot explain the first and second round results together. The mortality reduction of a long term screening programme is expected to be between 15–20%.

The observed results of the first and second screening round in Navarra cannot be explained by the present assumptions on the natural course of breast cancer and characteristics of the screening programme assuming a constant sensitivity over rounds. Studies on the possibility of another natural course of breast cancer in this southern region and review of the first and second round screening results should give a final answer to this problem. Nevertheless, it is expected that the programme will have an important health benefit for the women involved.

PP-4-22 **Overweight and Hormone Receptor Positive Breast Carcinoma in Postmenopausal Women**

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In an attempt to know whether "obese" postmenopausal women have got more often estrogen or progesterone receptor (ER, PR) positive tumors than lean women, we studied ER and PR content according to body mass index of Quetelet (QI).

Between 1974 and 1990, 698 postmenopausal women (age range: 41–93, median age: 62) presented with operable breast carcinoma (T 4, N2 or 3, inflammatory signs excluded). Quetelet's index = (weight/height²) $\times 10^4$ of every woman was established at diagnosis. ER and PR content was measured by using biochemical ligand-binding assay (dextran coated charcoal assay) and later by enzyme immune assays. Breast cancer in women with overweight (363 with QI > 25%) was more often receptor positive (ER + or PR +) than tumor in lean women (p = 0.009). Overweight