Mammographic Screening in Taiwan: Lessons Learned

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he ARRS 2015 Annual Meeting Global Exchange with Taiwan was a jointly sponsored focus session on breast cancer screening. The session was attended by representatives from ARRS and the Chinese Taipei Society of Radiology (CTSR). Moderated by Gary Whitman, professor of radiology at the MD Anderson Cancer Center, the session featured four breast cancer experts from CTSR who outlined the development of mammographic screening in Taiwan.

As in Western countries, breast cancer presents an important problem for the Taiwanese. The incidence of breast cancer is continuing to rise in both Taiwan and the West; however, while the mortality rate in the United States is falling, the number of deaths from breast cancer in Taiwanese women continues to rise, and there is a desperate need for an effective mammography program.

Although multiple high-quality randomized controlled trials (RCTs) and several metaanalyses have shown a significant reduction in mortality from breast cancer, recently published research results, including the controversial Canadian trial [1], have fueled the debate surrounding the true benefit of screening. The potential for overdiagnosis has also caused concern among health policy makers in Taiwan about the benefits of mass screening.

A Misunderstanding of Science

Professor Hsiu-Hsi Chen, epidemiologist and biostatistician at National Taiwan University, noted that there has been a “misunderstanding of science” due to inadequate consideration of the marked heterogeneity in the published RCTs [2–10], including differences in participation rates, screening intervals, technical factors, and mammographic sensitivity. Although many meta-

analyses account statistically for this heterogeneity using a random effects model, it is more important to acknowledge these differences and evaluate how each of their underlying factors has contributed to the reduction in the incidence of advanced breast cancer and breast cancer deaths.

The Quality Assurance Program

Following initial feasibility trials, free nationwide biannual screening of 50- to 60-year-old women in Taiwan commenced in 2004. Huay-Ben Pan, senior radiologist at Veterans General Hospital in Kaohsiung City, presented a summary of the 2004–2013 results of the screening program. She noted that the attendance rate for screening in Taiwan is only 32%, thought to be related to a low level of awareness of the value of screening.

The Taiwanese screening program uses a combination of fixed-site and mobile mammography units. The mobile units were introduced in 2007 and comprise 27% of the facilities. They are very popular: 50% of screenings in 2014 were performed in mobile units. Paula B. Gordon, clinical professor of radiology at the University of British Columbia and medical director of the BC Women’s Hospital Sadie Diamond Breast Health Program, and Stamatia V. Destounis of Elizabeth Wende Breast Care, LLC, expressed their support for this initiative. Dr. Gordon said that in British Columbia, “Women in remote areas who find it difficult to travel to the fixed centers benefit from these vans.” Dr. Destounis discussed the technical and logistical difficulties that her program had experienced with the use of mobile vans.

Despite the inferior quality of computed radiography (CR) and digital radiography, many of Taiwan’s mobile vans are still equipped with these units. Drs. Gordon and Destounis noted that despite its outdated equipment, the screening program had achieved surprisingly good results.

Some Similarities, Some Differences

The panel also discussed the prevalence of high breast density in Asian women and whether this factor affected the screening program. Dr. Pan said that radiologists in Taiwan are accustomed to reading the mammograms of women with dense breast tissue and that even older Asian women tend to have complex heterogeneously dense tissue. Dr. Gordon noted that studies have shown tomosynthesis to be particularly helpful in imaging this type of tissue. At present, however, tomosynthesis is infrequently used for screening in Taiwan (7% of studies and at only one fixed site). The large storage requirements associated with this modality remain an important challenge.

The peak incidence of breast cancer in Taiwan occurs in younger women (45 to 50 years old) as compared with 50 to 60
years old in Western countries. Given the sojourn time for cancer and the role of screening in early detection, Dr. Chen was asked why the screening age was lowered to 45 rather than 40. He replied that there was concern at that time about lack of evidence of significant mortality reduction in this age group. It was also thought that a gradual change based on monitoring of the evidence would be more cost effective.

The focus session concluded with a sobering comparison by Yung-Liang Wan of Chang Gung Memorial Hospital: The cost of detecting one breast cancer in Taiwan is $8,400; in the United States, the cost is $28,000.

It would seem that the West has much to learn from the judicious, tempered, and cost-effective approach Taiwan has taken to the introduction of mass-population breast cancer screening.

References: