

BREAST CANCER SCREENING AND DIAGNOSIS: 2009

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SCREENING FOR BREAST CANCER

- MAMMOGRAPHY REMAINS THE MAINSTAY IN BREAST CANCER SCREENING:
 - THERE IS SUFFICIENT SCIENCE THAT DEMONSTRATES IT SAVES LIVES.
 - IT IS QUICKLY PERFORMED AND INTERPRETED.
 - IT IS COST EFFECTIVE.

DATA TO SUPPORT SCREENING MAMMOGRAPHY

- RANDOMIZED CLINICAL TRIALS:
 - SEVEN STUDIES, AGES 39 - 74.
 - ALL SHOW A REDUCTION IN MORTALITY EXCEPT FOR TWO STUDIES FROM CANADA, BOTH OF WHICH HAD SIGNIFICANT FLAWS IN THE PERFORMANCE AND INTERPRETATION OF EXAMS, AS WELL AS THE RANDOMIZATION PROCESS.
 - ALL TRIALS COMBINED SHOW A 24% REDUCTION IN MORTALITY (INCLUDING CANADIAN STUDIES).

SERVICE SCREENING MAMMOGRAPHY

- SCREENING IN THE COMMUNITY SETTING.
- MORE LIKELY REPRESENTS ACTUAL PRACTICE.
- CAN HELP DETERMINE WHETHER BENEFITS IN MORTALITY ARE DUE TO SCREENING, TREATMENT, OR INCREASED AWARENESS.

SERVICE SCREENING DATA

- SIGNIFICANT REDUCTION IN MORTALITY EQUALING OR EXCEEDING MORTALITY REDUCTION IN RCT.
- SWEDISH STUDY DEMONSTRATED 39% MORTALITY REDUCTION, 2/3 ATTRIBUTED TO MAMMOGRAPHY .
- UK NATIONAL HEALTH STUDY 21% REDUCTION.
- ITALIAN STUDY DEMONSTRATED 42% REDUCTION.

LIMITATIONS AND HARMS OF SCREENING MAMMOGRAPHY

- FALSE NEGATIVE RESULTS ~ 10%.
- FALSE POSITIVE RESULTS 10% OR GREATER.
- RADIATION RISK VERY SMALL.
- FORTUNATELY, ULTRASOUND HAS GREATLY IMPROVED DIAGNOSIS OF PALPABLE LESIONS WITH NEGATIVE MAMMOGRAPHY.

ACS AND ACR RECOMMENDATIONS

- SCREENING MAMMOGRAPHY SHOULD BEGIN AT AGE 40, AND BE PERFORMED ANNUALLY.
- IF THE PATIENT HAS A MOTHER OR SISTER WHO HAD BREAST CANCER BEFORE THE AGE OF 50, THEY SHOULD BEGIN SCREENING 10 YEARS PRIOR TO THE DIAGNOSIS.

SCREENING MODALITIES

- MAMMOGRAPHY (DIGITAL OR FILM/SCREEN)
- ULTRASOUND
- BREAST MRI

DIGITAL VS. FILM/SCREEN MAMMOGRAPHY

- DIGITAL IS PROVEN BETTER FOR:
 - WOMEN WITH DENSE BREASTS
 - WOMEN UNDER 50
 - PRE-MENOPAUSAL WOMEN
- THESE ARE ALL THE SAME GROUP!

DIGITAL VS. FILM/SCREEN MAMMOGRAPHY

- PRACTICALLY SPEAKING, DIGITAL MAMMOGRAPHY IS REPLACING FILM/SCREEN MAMMOGRAPHY BECAUSE OF PATIENT PRESSURE.
- OTHER ADVANTAGES INCLUDE:
 - IT VISUALIZES THE SKIN BETTER.
 - THERE ARE NO CHEMICALS OR PROCESSORS.
 - IT IS ELECTRONICALLY TRANSMITTABLE.
 - CAD IS EASY TO APPLY.

COMPUTER AIDED DETECTION

- IMPROVES DETECTION, PARTICULARLY FOR CALCIFICATIONS.
- PREVENTS SIMPLE ERRORS OF OBSERVATION.
- DOES NOT REPLACE PHYSICIAN INTERPRETATION.

SCREENING ULTRASOUND

- CURRENTLY IT IS NOT USED AND IS NOT APPROVED AS A SCREENING DEVICE.
- THERE ARE NO STUDIES DEMONSTRATING EFFECTIVENESS IN A SCREENING POPULATION.
- INVESTIGATIONAL STUDIES ARE ONGOING LOOKING AT ULTRASOUND FOR SCREENING (ACRIN STUDY 6666).

SCREENING ULTRASOUND

- IT WILL NOT DETECT MICRO-CALCIFICATIONS, WHICH MAKE UP HALF OF ALL BREAST CANCERS.
- IT IS OPERATOR DEPENDENT AND TAKES ABOUT 10 MIN/PER EXAM.
- IT WILL FIND INVASIVE CANCERS THAT MAMMOGRAPHY MAY MISS.

SCREENING BREAST MRI

- ONLY PROVEN USEFUL IN WOMEN WHO ARE AT HIGH LIFETIME RISK (> 25%) FOR BREAST CANCER:
 - WOMEN WITH BRCA1 OR BRCA2 GENE
 - WOMEN WITH AT LEAST 2 FIRST DEGREE RELATIVES WITH BREAST CANCER.
 - WOMEN WITH UNUSUAL SYNDROMES.
 - WOMEN WITH PRIOR CHEST RADIATION (I.E. HODGKINS).

SCREENING BREAST MRI

- NOT USEFUL FOR WOMEN WHO ARE AT LOW LIFETIME RISK (< 15%) FOR BREAST CANCER:
 - THIS IS MOST WOMEN (85%).
 - WOMEN WITHOUT A FAMILY HISTORY.

SCREENING BREAST MRI

- FOR WOMEN AT MODERATE RISK (15-25%), THERE ISN'T ENOUGH DATA TO ADVISE THEM:
 - WOMEN WITH PERSONAL HISTORY OF BREAST CANCER.
 - WOMEN WITH DENSE BREASTS ON MAMMOGRAPHY.
 - WOMEN WITH MODERATE FAMILY HISTORY, I.E. AUNT, GRANDMOTHER.

DIAGNOSTIC EVALUATION

- MAMMOGRAPHY
- ULTRASOUND
- BREAST MRI
- GALACTOGRAPHY
- NEEDLE BIOPSY (STEREOSCOPIC OR US).

DIAGNOSTIC EVALUATION

- DON'T WORRY ABOUT WHAT TO ORDER, LET THE RADIOLOGIST DECIDE WHICH TEST IS BEST.
- LET THE RADIOLOGIST ASSUME RESPONSIBILITY FOR FOLLOW-UP AND TRACKING.
- GIVE THE RADIOLOGIST PERMISSION TO PERFORM WHATEVER TEST IS NECESSARY, INCLUDING A BIOPSY.

DIAGNOSTIC EVALUATION

- MAMMOGRAPHY EXCELLENT FOR CALCIFICATIONS.
- ULTRASOUND EXCELLENT FOR MASSES, EITHER PALPABLE OR IDENTIFIED ON MAMMOGRAPHY.
- BREAST MR SHOULD ONLY BE UTILIZED IN SELECTED CASES, AFTER MAMMOGRAPHY AND ULTRASOUND.
- GALACTOGRAPHY IS USEFUL FOR A PATHOLOGIC DISCHARGE.

DIAGNOSTIC MAMMOGRAPHY

- USED TO EVALUATE SUSPICIOUS DENSITIES, MASSES AND CALCIFICATIONS.
- MAY INVOLVE FOCAL COMPRESSION, MAGNIFICATION, OR DIFFERENT PROJECTIONS.

DIAGNOSTIC ULTRASOUND

- FOCUS ON AN ABNORMALITY, EITHER ON MAMMOGRAPHY OR ON PHYSICAL EXAMINATION.
- EXCELLENT FOR DETERMINING CYSTIC FROM SOLID MASSES.
- EXCELLENT FOR DIFFERENTIATING PHYSIOLOGIC NODULARITY FROM A LUMP IN THE BREAST.

DIAGNOSTIC ULTRASOUND

- ONE SHOULD REALLY CONCENTRATE ON FINDING CANCER, NOT CYSTS.
- ULTRASOUND IS ALSO EXCELLENT FOR MASSES.
- US DOES NOT IDENTIFY CALCIFICATIONS, WHICH COMPRISE HALF OF ALL CANCERS.

DIAGNOSTIC BREAST MRI

- MOST COMMON USE IS TO DIAGNOSE SYNCHRONOUS MALIGNANCY IN NEWLY DIAGNOSED CANCER, EITHER IN THE SAME BREAST OR OPPOSITE BREAST.
- CAN BE USED FOR PROBLEM SOLVING, HOWEVER SHOULD NOT BE THE FIRST OR EVEN SECOND STEP.
- FREQUENTLY LEADS TO REPEAT ULTRASOUND, MAMMOGRAPHY OR BIOPSY.

GALACTOGRAPHY

- USED FOR A PATHOLOGIC DISCHARGE, USUALLY A UNILATERAL BLOODY OR CLEAR DISCHARGE.
- NORMAL DISCHARGES INCLUDE MILKY, CLOUDY, BROWN, GREY, BLACK AND GREEN, ESPECIALLY IF FROM MULTIPLE DUCTS OR IF BILATERAL.
- IF THE PATIENT IS NULLIPAROUS, AND HAS A BILATERAL DISCHARGE, YOU SHOULD INVESTIGATE FOR A PITUITARY TUMOR.

PERCUTANEOUS BIOPSY

- CAN BE MAMMOGRAPHICALLY (STEREOTACTIC) OR ULTRASOUND GUIDED.
- IS HIGHLY ACCURATE, WELL TOLERATED, EASY TO PERFORM, AND RELATIVELY PAINLESS.
- HAS VERY LOW MORBIDITY AND ALMOST NO MORTALITY.
- COMPLICATIONS INCLUDE HEMATOMA AND INFECTION.

SUMMARY

- SCREENING MAMMOGRAPHY DOES SAVE LIVES.
- SCREENING SHOULD BEGIN AT AGE 40 UNLESS MOTHER OR SISTER HAD BREAST CANCER BEFORE AGE 50.
- DIGITAL MAMMOGRAPHY IS REPLACING FILM/SCREEN MAMMOGRAPHY.
- ULTRASOUND IS GOOD FOR DIAGNOSTIC WORK, NOT A SCREENING MODALITY.

SUMMARY

- SCREENING BREAST MRI ONLY RECOMMENDED FOR HIGH RISK INDIVIDUALS (>25%)
- DIAGNOSTIC BREAST MRI CAN BE USED AS A PROBLEM SOLVER, BUT HAS MORE UTILITY IN PATIENTS WITH RECENTLY DIAGNOSED BREAST CANCER.

SUMMARY

- GALACTOGRAPHY IS USEFUL TO EVALUATE A PATHOLOGIC DISCHARGE.
- PERCUTANEOUS BIOPSY IS ACCURATE AND EASY TO PERFORM.
- LET YOUR RADIOLOGIST MANAGE YOUR BREAST DIAGNOSIS.

REFERENCES

- ACS Guidelines for Breast Cancer Screening: Update 2003 *CA Cancer J Clin* 2003;53;141-169
- Diagnosis of Breast Disease, 12th edition, Jan 2008, ICSI Guideline
- ACS Guidelines for Breast Screening with MRI as an Adjunct to Mammography *CA Cancer J Clin* 2007;57;75-89