ICD-O-3
Carcinoma, infiltrating duct, NOS
8500/3 12/8/10
lw

Path Site Code: breast, upper outer quadrant C50.4
CQCF Site: breast, NOS C50.9

TSS

SPECIMENS:
A. RIGHT AXILLARY CONTENTS
B. RIGHT BREAST LUMPECTOMY
C. RIGHT BREAST SUPERIOR MARGIN

SPECIMEN(S):
A. RIGHT AXILLARY CONTENTS
B. RIGHT BREAST LUMPECTOMY
C. RIGHT BREAST SUPERIOR MARGIN

INTRAOPERATIVE CONSULTATION DIAGNOSIS:
B. Right breast, lumpectomy (Gross examination only): 3.0 cm firm tumor, 1.5 cm from deep margin. Satellite tumor 1 cm from main tumor, 1 cm in diameter (1.0 cm from antero medial margin).
By Dr. called to Dr. at

GROSS DESCRIPTION:
A. RIGHT AXILLARY CONTENTS
Received in formalin in a container labeled with the patient name designated "a. right axillary contents" is a portion of red-yellow firm adipose tissue measuring 10.1 x 8.5 x 3.7 cm. Multiple firm enlarged lymph nodes are identified, ranging in size from 0.3 x 0.2 x 0.2 up to 3.5 x 2.5 x 2.0 cm. Cassettes are submitted as follows:
A1-A2: representative sections, 1 lymph node
A3-A5: 1 lymph node
A6-A8: 1 lymph node
A9-A10: 1 bisected lymph node
A11: 1 bisected lymph node
A12: 4 lymph nodes
A13: 3 lymph nodes
A14: 3 lymph nodes
A15: 2 lymph nodes
A16: 3 lymph nodes
A17: 3 lymph nodes
A18-A20: additional possible lymph nodes

B. RIGHT BREAST LUMPECTOMY
Received fresh is an oriented 226 gm lumpectomy specimen, 15 x 10 x 4 cm. The specimen is partially surfaced with a tan-pink ellipse of skin, 11.5 x 5.5 cm. The skin surface is grossly unremarkable. The specimen is inked as follows: anterior-blue, posterior-black, superior-red, inferior-orange, medial-green, lateral-yellow. Specimen is serially sectioned from superior to inferior into 6 slices; slice 1 being most superior, slice 6 being most inferior to reveal a gray-white firm well circumscribed mass, 3.0 x 2.5 x 1.7 cm located in slice 2 and 3. Mass #1 measures 1.5 cm from the closest deep margin and 2.0 cm from the anterior margin. A 2nd possible satellite nodule is identified, 0.8 x 0.7 x 0.6 cm, 0.6 cm medial to mass #1 located in slice 2. The 2nd mass measures <1.0 cm from all margins. The 2nd mass measures 0.6 cm from the medial margin. Mass #2 measures 0.6 cm from mass #1. The remaining cut surface reveal predominantly yellow lobulated adipose tissue inter dispersed with gray-white fibrous tissue. A portion of the specimen is submitted for tissue procurement and representative sections are submitted as follows:
B1: area immediately adjacent to mass #1 slice 1
B2: perpendicular sections of the superior margin slice 1
B3: lateral margin slice 2
B4: posterior margin slice 2
B5: mass #1 slice 2
B6-B7: mass #1, bisected slice 2
B8-B9: #2, bisected slice 2
B10: medial margin slice 2
B11: skin slice 2
B12: lateral margin slice 3
B13-B14: mass #2 slice 3
B15: area immediately adjacent to mass #2 slice 3
B16: medial margin slice 3
B17: skin slice 3
B18: posterior margin slice 3
B19: area immediately adjacent to mass #1 slice 4
B20: medial margin slice 4

B21: medial and posterior margin slice 5
B22: lateral margin slice 5
B23: perpendicular section taken of the inferior margin slice 6 as per attached diagram
B24: posterior margin
B25: superior margin

C. RIGHT BREAST SUPERIOR MARGIN
Received in formalin is a 12 gm oriented fragment of fibrofatty tissue, 9.0 x 3.0 x 1.5 cm. The new true margin is inked blue and the specimen is serially sectioned to reveal grossly unremarkable breast parenchyma. Entirely submitted in cassettes C1-C10.

DIAGNOSIS:

A. AXILLARY CONTENTS, RIGHT, DISSECTION:
- METASTATIC CARCINOMA TO 10 OF 24 LYMPH NODES WITH EXTRANODAL EXTENSION, LARGEST METASTASIS IS 3.5 CM (10/24).

B. BREAST, RIGHT, LUMPECTOMY:
- INVASIVE DUCTAL CARCINOMA WITH SATELLITE NODULE.
  - SBR GRADE 3.
  - TUMOR MEASURES 3 CM AND 1.1 CM.
  - MARGINS, NEGATIVE FOR CARCINOMA.
  - LYMPHOVASCULAR INVASION IS PRESENT.
- DUCTAL CARCINOMA IN SITU (DCIS), SOLID AND CRIBRIFORM TYPES, NUCLEAR GRADE 3, WITH COMEDO NECROSIS, MINOR COMPONENT.
- SKIN, NEGATIVE FOR CARCINOMA.

C. BREAST, RIGHT, SUPERIOR MARGIN, EXCISION:
- BREAST TISSUE, NEGATIVE FOR CARCINOMA.

SYNOPTIC REPORT - BREAST
Specimen Type: Excision
Needle Localization: No
Laterality: Right
Invasive tumor: Present
Multifocality: Yes
WHO CLASSIFICATION
Invasive ductal carcinoma, NOS 8500/3
Tumor size: 3cm
Tumor site: Upper outer quadrant
Margins: Negative
Distance from closest margin: Greater than 1cm
all margins
Tubular score: 3
Nuclear grade: 3
Mitotic score: 2
Modified Scarff Bloom Richardson Grade: 3
Necrosis: Absent
Vascular/Lymphatic Invasion: Present
Lobular neoplasia: None
Lymph nodes: Axillary dissection
Lymph node status: Positive 10 / 24 Extranodal extension

DCIS present
Margins uninvolved by DCIS: 0.4 cm from medial margin, focal
DCIS Quantity: Estimate 10%
DCIS type: Solid
Cribriform
DCIS location: Both associated and separate from invasive tumor mass
Nuclear grade: High
Necrosis: Present

ER/PR/HER2 Results
Performed on Case:
ER: Negative
PR: Negative
HER2: Positive by IHC

Pathological staging (pTN): pT 2 N 3

SYNOPTIC REPORT - BREAST, ER/PR RESULTS
Specimen: Surgical Excision
Block Number: B14

ER: Negative Allred Score: 0 = Proportion Score 0 + Intensity Score 0
PR: Negative Allred Score: 0 = Proportion Score 0 + Intensity Score 0

COMMENT:
The Allred score for estrogen and progesterone receptors is calculated by adding the sum of the proportion score (0 = no staining, 1 = <1% of cells staining, 2 = 1 - 10% of cells staining, 3 = 11-30% of cells staining, 4 = 31-60% of cells staining, 5 = >60% of cells staining) to the intensity score (1 = weak intensity of staining, 2 = intermediate intensity of staining, 3 = strong intensity of staining), with a scoring range from 0 to 8.
ER/PR positive is defined as an Allred score of >2 and ER/PR negative is defined as an Allred score of less than or equal to 2.
Methodology: Fixation Type and Length: Tissue was fixed in 10% neutral buffered formalin
") for no less than 8 and no longer than 24 hours. Antibody and Assay Methodology: Mouse anti-human ER and PR,
Comment: This assay can be used to select invasive breast cancer patients for hormone therapy (1).
ER and PR analysis was performed on this case by immunohistochemistry utilizing the ER (ER 1D5, 1:100) and PR (PGR 136, 1:100) antibody provided by Dako, following the manufacturer's instructions listed in the package insert. This assay was not modified, and adherence to all instruction and guidelines were strictly followed. Interpretation of the ER/PR immunohistochemical staining characteristics is guided by published results in the medical literature (1), information provided by the reagent manufacturer and by internal review of staining performance within the Pathology Department.
1. Harvey JM, et al. Estrogen receptor status by immunohistochemistry is superior to the ligand-binding assay for predicting response to adjuvant endocrine therapy in breast cancer. J Clin Oncol. 17:1474-1481, 1999

SYNOPTIC REPORT - BREAST HER-2 RESULTS
HER2 Status Results, Immunohistochemistry Evaluation
Specimen: Surgical Excision
Block Number: B14

Interpretation: POSITIVE
Intensity: 3+
% Tumor Staining: 100%
Fish Ordered: No

METHODOLOGY
Methodology: Fixation Type and Length: Tissue was fixed in 10% neutral buffered formalin
for no less than 8 and no longer than 24 hours. Antibody and Assay Methodology: Rabbit anti-human HER2, HerceptestTM (FDA-approved test kit),). Control Slides Examined: External kit-slides provided by manufacturer (cell lines with high, low and negative HER2 protein expression), and in-house known HER2 amplified control tissue were evaluated along with the test tissue. These control slides run along side of this patient's sample showed appropriate staining. Adequacy of Specimen: Adequate, well preserved, clear-cut invasive carcinoma identified for HER2 evaluation.
Scoring Criterion and Scoring System:
IHC Level of Expression(Score) /Tumor Cell Membrane Staining Pattern
Negative (0)/Absence of Staining
Negative (1+)/Faint Incomplete membrane Staining, >10% of Cells
Equivocal (2+)/Weak complete membrane Staining, >10% of Cells
Positive (3+)/Strong complete membrane Staining, >10% of Cells
Equivocal Category for HER2 IHC results: A HER2, 2+ staining result that is interpreted as equivocal may not indicate gene amplification. A FISH test for HER2 gene amplification will be ordered for all HER2 IHC 2+ results.
COMMENT
This assay can be used to select invasive breast cancer patients for Trastuzumab (Hereptin) therapy (1,2). Clinical Trials have shown that Trastuzumab substantially increases the likelihood for an objective response and overall survival for patients with metastatic HER2-positive breast cancer, regardless of whether HER2 tumor status was determined as IHC 3+ or FISH positive. Trastuzumab added to adjuvant chemotherapy substantially increase disease-free survival and decreases the risk of disease recurrence by about 50% for patients with early-stage HER2 protein over-expressed or gene amplified invasive breast cancer (3).
HER2 analysis was performed on this case by immunohistochemistry utilizing the FDA approved Dako HercepTest (TM) test kit following the manufacturer's instructions listed in the package insert. This assay was not modified, and adherence to all instruction and guidelines were strictly followed. Interpretation of the HER2 immunohistochemical staining characteristics is guided by published results in the medical literature (4), information provided by the reagent manufacturer and by internal review of staining performance within the Pathology Department.
HER2 TEST VALIDATION
This HER2 immunohistochemical assay has been validated according to the recently revised recommendations and guidelines from the NCCN HER2 testing in Breast Cancer Task Force, and the jointly issued recommendations and

guidelines from ASCO and the CAP (5). 80 randomly selected breast cancer samples were tested for HER2 by IHC as outline above and interpreted as, negative (score 0/1+) equivocal (score 2+) and positive (score 3+) without knowledge of the previous reported results.

These cases were also blindly read using two different FISH assay as amplified or non-amplified and the HER2/CEP17 ratios were recorded. After analyzing these results, there was 100% concordance between the IHC and FISH results for cases that were interpreted as either positive or negative by IHC. 9 of the 80 cases were interpreted as equivocal by IHC and of these 3/9 (33%) were non-amplified by FISH and 6/9 (66%) were found to be amplified.

The Pathology Department Immunohistochemistry laboratory takes full responsibility for this tests performance and has programs in place to regularly monitor the proficiency and the interpretation of HER2 assays. The laboratory also participates in external quality assurance HER2 programs including the CAP proficiency testing program.

REFERENCE

1. Carlson RW, Anderson BO, Burstein HJ, et al., NCCN breast cancer clinical practice guidelines in oncology. J Natl Compr Canc Netw. 2005;3:238-289.
2. Carlson RW, Brown E, Burstein HJ, et al., NCCN Task Force Report: adjuvant therapy for breast cancer. J Natl Compr Canc Netw. 2006;4:S1-S26.
3. Romond EH, Perez EA, Bryant J, et al. Trastuzumab plus adjuvant chemotherapy for operable HER2-positive breast cancer. N Eng J Med 2005;353(16):1673-84
4. Leong ASY, Formby M, Haffajee Z, et al. Refinement of immunohistologic parameters for Her2/neu scoring validation by FISH and CISH. Appl Immunohistochem Mol Morphol. 2006;14:384-389.
5. Wolff AC, Hammond EH, Schwartz JN, et al., American Society of Clinical Oncology/College of American Pathologists Guideline Recommendations for Human Epidermal Growth Factor Recepto 2 Testing in Breast Cancer. Arch of Path and Lab Med 2007; 131:18-43.

CLINICAL HISTORY:

year old female with large right breast mass and satellite lesion (1 cm) anterior to main tumor. Now for lumpectomy.

PRE-OPERATIVE DIAGNOSIS:

None given

Gross Dictation: Pathologist,
Microscopic/Diagnostic Dictation: Pathologist,
Gross Dictation: Pathologist,
Microscopic/Diagnostic Dictation: Pathologist
Final Review: Pathologist,
Final: Pathologist,

Criteria	Yes	No
Diagnosis Discrepancy		
Primary Tumor Site Discrepancy		
HIPAA Discrepancy		
Prior Malignancy History		
Dual/Synchronous Primary Noted		
Case is (circle):	QUALIFIED / DISQUALIFIED	
Reviewer Initials	Date Reviewed:	