AJCC 8th Edition Staging

Minor Rule Changes

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Learning Objectives

• Examine key rules with their rationale

• Identify minor rule changes between 7th & 8th editions

• Dissect reasons for minor changes
  – Keep pace with changing medicine
  – Clarifications
  – Criteria and specifications
Learning Assessments

• Testing effect or retrieval practice
  – Testing yourself on idea or concept to help you remember it

• Many experts have agreed for centuries
  – Act of retrieving info over and over, makes it retrievable when needed
  – Aristotle: exercise in repeatedly recalling strengthens memory

• Why retrieval/quizzing slows forgetting, helps remembering
  – Memory is dynamic (keeps changing), retrieval helps it change
  – Test often for better results

• Quizzes
  – Pretest as part of registration
  – Quiz during lecture
  – Posttest emailed weeks later to assess retention
  – Also assesses clarity of instruction and instructor

Key Rules and Rationales

Stage Classifications: Time Frame & Criteria

• All stage classifications have TIME FRAME & criteria

• Time frame or staging window
  – Defines point in time of patient’s care
  – Starting and stopping time points
Stage Classifications: Time Frame & Criteria

- All stage classifications have time frame & CRITERIA
  - Criteria defined by
    - Diagnostic workup
    - Definitive treatment
  - Diagnostic procedures are sample
    - No intent to remove entire tumor
    - Do not know entire tumor removed until after treatment performed
    - Surgical diagnostic procedures ≠ surgical treatment
  - Definitive treatment
    - Surgical treatment meets resection requirement in chapter
    - Neoadjuvant therapy must satisfy NCCN/ASCO/other guidelines

Diagnostic vs. Treatment

- Do not use old registry rules for staging
  - Anything that modified, removed, controlled, or destroyed tumor is considered treatment
- Diagnostic
  - Procedures to diagnose
  - Procedures to further define/stage in order to develop treatment plan
- Treatment
  - Treatment definition based on patient outcome/survival
  - Intent to remove all or most of cancer
  - Planned significant impact on cancer burden
  - Provides patient with greatest chance of survival

Scenario

- Pt had hematuria and underwent TURB. Path showed urothelial carcinoma into muscularis propria.
  - Only clinical staging assigned for this case
  - TURB
    - While it is a type of resection
    - TURB is NOT considered treatment for staging
  - Pathological staging requires at least partial cystectomy
Scenario

- Breast core bx shows infiltrating ductal ca. Lumpectomy shows no residual tumor.
- Biopsy used for clinical staging
- Lumpectomy used for pathological staging
- Bx NOT considered definitive treatment for staging criteria
  - No intent to remove tumor
  - No knowledge tumor removed until after surgical treatment
  - Biopsy never appropriate definitive treatment

Minor Changes Between 7th and 8th Editions

Any T, Any N

- Any T defined
  - Includes all T categories except Tis
  - Includes TX and T0

- Any N defined
  - Includes all N categories
  - Includes NX and N0
Scenario

- Cystectomy showing T4b bladder ca, no nodes removed.
- Ileum resection, no primary tumor found, 2 regional nodes for pN1, no distant mets.

- Registry documents pT4b pNX cM0 stage IVA
  - Any N includes NX

- Registry documents pT0 pN1 cM0 stage IIIA
  - Any T includes T0

Stage Classification Criteria

- Clinical staging criteria: known or suspected tumor
  - Must be known or suspected
  - Have diagnostic workup including at least history & physical exam
  - NOT incidental finding at time of surgical treatment
  - No retrospective assignment during/after treatment

- Pathological staging criteria: primary tumor surgical resection
  - Must meet surgical resection criteria
  - Surgical resections ranges from
    - Resection of tumor, up to
    - Complete resection of organ, and
    - Usually includes resection of some regional lymph nodes
  - Depends on site-specific info necessary to determine
    - Adjuvant therapy
    - Patient’s prognosis

Scenario

- Patient has gastric sleeve surgery for weight loss. Path report shows adenocarcinoma.

- No clinical stage assigned
  - Not known or suspected prior to surgery
  - Incidental finding at surgical resection
  - No retrospective assignment after surgery
Unknown Primary or No Evidence of Primary

- **T0**
  - No evidence of primary tumor
  - Primary site of tumor is unknown
  - Staging based on clinical suspicion of primary organ site
  - T0 not available in all sites, cannot suspect primary from nodes/mets

- **Example**
  - Axillary node involvement, suspected clinically to be from breast

- **Example of exception**
  - T0 not used for head & neck squamous ca sites
  - Use Cervical Nodes & Unknown Primary Tumor chapter
  - **Exception to exception**: T0 is valid for
    - HPV-related oropharynx and
    - EBV-related nasopharynx

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Scenario

- Patient has enlarged axillary nodes. Biopsy showed melanoma. No skin lesions are identified.
- Registry assigns clinical cT0 cN1b cM0 stage III
- **T0**
  - Indicates no primary tumor found
  - Staging based on clinical suspicion of skin melanoma

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Scenario

- Patient has pancreatoduodenal nodes showing well differentiated neuroendocrine ca.
  - T0 not available for neuroendocrine duodenum & pancreas
    - Cannot suspect primary site without more information
    - Less than 4% of all GI neuroendocrine ca arise in duodenum
    - Rare occurrence of neuroendocrine ca in pancreas
  - More info needed to choose appropriate chapter for staging
Rarely Node Status Not Required

- Node status not required in rare circumstances
- Clinical and pathological staging N category
  - Cancer sites where node involvement is rare
  - NX may not be category option
  - Node status not determined as involved assigned as cN0
  - cN0 for pathological staging ensures no confusion with nodes microscopically proven to not contain tumor (pN0)

Rarely Node Status Not Required

- Nonexhaustive examples commonly discussed
  - Soft tissue does not have NX
  - Bone note states NX may not be appropriate, may be cN0
  - Melanoma allows cN0 for pathologic stage group with pT1
  - Corpus uteri at times permits cT and cN in pathological staging
    - Surgeon's nodal assessment specifically noted in operative report

Node Status Not Required in pN Category

- All chapter exceptions where cN0 used for cN & pN category
  - 38 Bone
  - 40 Soft Tissue Sarcoma of Head and Neck
  - 41 Soft Tissue Sarcoma of Trunk and Extremities
  - 42 Soft Tissue Sarcoma of Abdomen and Thoracic
  - 43 Gastrointestinal Stromal Tumor
  - 44 Soft Tissue Sarcoma of Retroperitoneum
  - 53 Corpus Uteri Carcinoma and Carcinosarcoma
  - 54 Corpus Uteri Sarcoma
  - 67 Uveal Melanoma
  - 68 Retinoblastoma

- Limited exception where cN0 used for pN category
  - 47 Melanoma: pT1

Other rules also allow cT and cN in pathological staging
Scenario

- CT and image guided bx confirm 6cm FNCLCC grade 2 retroperitoneal sarcoma.
- Retroperitoneal sarcoma resection shows 6.5cm tumor, FNCLCC grade 1, no nodes removed.
- Registry assigns clinical stage cT2 cN0 cM0 G2 stage IIIA
  - Physician judgment and imaging allow cN0
- Registry assigns pathological stage pT2 cN0 cM0 G2 stage IIIA
  - Exception allowing cN0 used for pathological staging
  - Rare nodal involvement
  - Path stage = clinical stage + op findings + path resected specimen
  - Grade 2 used for pathological staging

Microscopic Assessment cN & pN

- Microscopic assessment for cN and pN
  - Fine needle aspiration (FNA)
  - Core (needle) biopsy
  - Incisional biopsy
  - Excisional biopsy
  - Sentinel node biopsy/procedure
  - pN ONLY: regional lymph node dissection
- Specifies cytology just as valid as tissue
  - Pathologists confirmed
  - Registrars should not doubt cytology

Microscopic Assessment pN

- Requirements for assigning pN category
  - Pathological documentation of presence/absence of ca in 1 node
  - Pathological assessment primary tumor, except in T0
  - FNA and core needle biopsy of node both satisfy requirement
- cN microscopic info included in pathological staging
  - Path staging = clinical stage + op findings + path resected specimen
  - Always use cN microscopic info in pathological staging
  - Include imaging/physical exam cN info IF pN requirement met
Scenario

- Mammogram showed 2cm tumor in elderly patient. Core needle bx was ductal ca, Nottingham grade 2, ER+, PR+, HER2 neg. FNA lt axillary node cytology showed ductal ca. Lumpectomy showed 1.8cm ductal ca, Nottingham grade 2, ER/PR+, HER2 neg. No nodes removed.

- Registry assigns clinical stage
  - cT1c cN1 cM0 Gr2 HER2- ER+ PR+ stage IB

- Registry assigns pathological stage
  - pT1c pN1a cM0 Gr2 HER2- ER+ PR+ stage IA
  - Use clinical node FNA for pathological staging, meets requirement

Sentinel Lymph Node Clearly Defined

- Sentinel lymph node (SLN)
  - Receives direct afferent lymphatic drainage from primary tumor
  - Represents nodes most likely to contain disease
  - More than 1 node may be present in nodal basin
  - Some tumors drain to more than 1 regional nodal basin

Sentinel Lymph Node Procedure

- SLN procedure – lymphatic mapping
  - Injection of colloidal material into primary tumor or organ
    - Iosulfan blue stain and/or radiotracer technetium-99 sulfur colloid
  - Identification and removal of nodes
    - Sentinel nodes: those containing colloidal material
    - Nonsentinel nodes: palpably abnormal nodes without colloidal material

- SLN procedure includes sentinel & nonsentinel nodes
  - Nonsentinel nodes not separate nodal procedure
  - Nonsentinel nodes not lymph node dissection
Scenario

- Gross specimen A labeled lt axillary sentinel lymph nodes
  - One lymph node 2x0.6x0.4cm and
  - Other inked blue lymph node 0.5x0.5x0.5cm
  - Two lymph nodes negative for carcinoma
- Gross specimen B labeled lt hottest axillary sentinel node
  - One lymph node measures 1.1x0.6x0.3cm and
  - Second inked blue lymph node 1.2x0.5x0.4cm
  - Two lymph nodes negative for carcinoma
- All 4 nodes considered sentinel node procedure
  - Two sentinel nodes inked blue
  - Two non-sentinel nodes adjacent to inked nodes
- Patient had sentinel node procedure
  - 4 nodes examined for sentinel node procedure
  - 0 nodes positive for sentinel node procedure

pM1 for Clinical & Pathological Classifications

- Microscopic evidence of distant mets, pM1, includes
  - Cytology from FNA
  - Core (needle) biopsy
  - Incisional or excisional biopsy
  - Resection
- Direct extension into organ not M category
  - Example: colon ca extends into liver, pT4b and cM0

pM1 for Clinical & Pathological Classifications

- Use of pM1 for multiple distant mets
  - If M subcategories distinguish between one or more sites
  - Microscopic evidence of ONE site needed for higher subcategory
  - Microscopic evidence of all sites is NOT necessary
  - Note: both sides of paired organ considered ONE site
Scenario

• Near total gastrectomy pathology report showed large stomach tumor extending into transverse colon and liver, and ten nodes negative for cancer.

• pT4b pN0 cM0 stage IIIA

• Direct extension into liver is pT4b, NOT M1

T4b Tumor invades adjacent structures/organs

Scenario

• CT guided lung bx showed adenoca. Bone scan indicated mets in rt hip. FNA liver cytology showed metastatic adenoca.

• Assign clinical M category as pM1c

• Cytology is valid microscopic evidence

• Only evidence of one met is required for higher subcategory

M1b Single extrathoracic metastasis in a single organ (including involvement of a single nonregional node)

M1c Multiple extrathoracic metastases in a single organ or in multiple organs

Criteria for Neoadjuvant Therapy

• Not all medication meets criteria for neoadjuvant therapy
  – Examples include short course endocrine Rx for breast & prostate
  – Provided for variable and often unconventional reasons
  – Not categorized as neoadjuvant therapy for AJCC staging
  – Do not assign yp, surgical resection staging is p (pathological)

• Treatments that satisfy definition of neoadjuvant therapy
  – NCCN Guidelines
  – ASCO Guidelines
  – Other treatment guidelines

• Recent trend
  – Physician experts provided clarification, applies to 7th edition
  – Valid for 7th edition AJCC staging and 8th edition AJCC staging
**Scenario**

- Breast bx was ductal ca. Pt had one week of tamoxifen. Then lumpectomy and sentinel node procedure performed.
- Prostate bx was adenoca. Pt given one shot lupron. Then prostatectomy and nodal dissection performed.
- **NOT** neoadjuvant therapy for breast or prostate case
- Breast neoadjuvant according to guidelines
  - Usually 4-6 cycles of chemo, sometimes more
  - Usually 4-6 months of endocrine therapy, may be up to 1 year
- Prostate neoadjuvant according to guidelines
  - **No** neoadjuvant therapy outside of clinical trials
  - Neoadjuvant ADT short term (4-6 months) treatment
  - Neoadjuvant ADT long term (2-3 years) treatment

**New Posttherapy Stage Data Items**

- New stage data items for postneoadjuvant therapy staging
- Collect clinical, pathological, posttherapy staging separately
- Emphasizes differences between p and yp stage
  - Timing and criteria
  - Staging rules
- Cannot easily determine whether p or yp in pre-2018 data
  - Descriptor y not always coded
  - Cannot depend on systemic therapy codes
  - All coded therapy is **NOT** neoadjuvant
- Pathological stage **ONLY** in Path T, N, M, stage group
- Posttherapy stage **ONLY** in **NEW** Post Therapy items

**Scenario**

- Stomach EUS imaging and EUS-FNA showed adenoca, cT2. Pt underwent chemotherapy and radiation therapy. Then subtotal gastrectomy and node dissection performed.
- Clinical staging and posttherapy staging assigned
- Posttherapy staging in **NEW** data items
  - Important to distinguish from pathological staging
  - y descriptor not consistently used in past
  - Registrars assigned posttherapy in past, just new abstract location
- Pathological and posttherapy **NEVER** apply to same case
  - Pathological staging **NOT** appropriate in this case
  - Surgical treatment was not done first
Response to Neoadjuvant Rx

- Systems for pathologist to document response
  - Consult disease site chapter
  - Complete, partial, no response
  - Regression score

- Critical to assign ypT and ypN for analysis of response

- Mucin pools, necrosis, and reactive changes
  - Without viable-appearing tumor cells
  - Insufficient for diagnosis of residual cancer
  - Not included in assessment of residual cancer

Scenario

- Rectal cancer with neoadjuvant chemoradiation therapy. Then low anterior resection and node dissection performed. Pathology showed reactive changes and necrosis in rectum, and mets in 2 of 15 nodes.

- ypT0 assigned since no viable cancer cells identified

- Tumor regression score from pathologist or physician
  - Included in CAP protocol and AJCC chapter
  - Not assigned by registrar, may be documented by registrar

<table>
<thead>
<tr>
<th>Modified Ryan Scheme Tumor Regression Score</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No viable tumor cells (complete response)</td>
<td>0</td>
</tr>
<tr>
<td>Single cells or rare small groups of cancer cells (near complete response)</td>
<td>1</td>
</tr>
<tr>
<td>Residual cancer with evident tumor regression, but more than single cells or rare small groups of cancer cells (partial response)</td>
<td>2</td>
</tr>
<tr>
<td>Extensive residual cancer with no evident tumor regression (poor or no response)</td>
<td>3</td>
</tr>
</tbody>
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Information and Questions on AJCC Staging
Summary

- Comprehend key rules and rationale behind development
- Compare minor rule changes between 7th & 8th editions
- Interpret reasons for minor changes
  - Keep pace with changing medicine
  - Clarifications
  - Criteria and specifications

Thank you

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