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Background

- American College of Radiology, Quality Research in Radiation Oncology (QRRO), formerly Patterns of Care (PCS), aims to provide an evidence base for quality of care in radiation oncology.
- Through process surveys, QRRO aims to:
 - Conduct surveys allowing documentation of process of care and quality assurance
 - Collect data
 - Define a core set of process measures for major cancers
 - Document the effects of clinical trials results, practice guidelines and appropriateness criteria
 - Identify factors associated with higher compliance with clinical standards
 - Describe patient and practice-based parameters
 - Benchmark and track the distribution and utilization of advanced radiotherapy technology
 - Disseminate information and educate target audiences
- Gastric cancer was selected as one of 5 disease sites for study to determine the national patterns of radiotherapy practice in patients treated for Stage IB-IV (non-metastatic) gastric cancer.

Methods

A national process survey was conducted from randomly selected RT facilities in the USA, stratified by practice type, and from randomly selected eligible gastric cancer cases treated from 2005-2007. ACR clinical data abstractors collected facility and process survey data through retrospective on-site patient record review. The survey instruments allow measurement of compliance with quality indicators, as well as patient demographics, diagnosis, staging, history, geographic region, practice setting, insurance status, treatment, and outcome

The GI committee defined two readily evaluable clinical performance measures (CPM) based on results of level one clinical trials and national guidelines as quality indicators.

Computation of CPM

Proportion of patients that meet the CPM

=

Sub-set of the patient population with the condition that meets the defined criteria

/

Patient population with the condition

Less

Patients with exclusions

Current Performance Measures

CURRENT PERFORMANCE MEASURE #1A

Use of CT-based simulation and treatment planning

Rationale: CT-based simulation and planning techniques improve precision and should be employed for all patients receiving adjuvant RT for gastric cancer to minimize the normal tissue irradiated. Dosimetric analyses of AP/PA versus CT-based 3D conformal radiotherapy (3DCRT) plans have shown reduced doses to the kidneys by using 3D RT techniques.⁽¹⁾ Clinical studies have demonstrated a decrement in renal function after adjuvant RT for gastric cancer which may be reduced by using 3-D treatment planning techniques.⁽²⁾

Quantifiable Measure: The percentage of patients with Stage IB – IV (non-metastatic) gastric cancer receiving radiation who underwent CT-based simulation and treatment planning compared with all patients with Stage IB – IV (non-metastatic) gastric cancer who received RT.

CURRENT PERFORMANCE MEASURE #1B

Use of Dose volume histograms (DVH) to evaluate normal tissue doses to the kidneys and liver.

Rationale: CT-based RT simulation and planning techniques improve precision and should be employed for all patients receiving adjuvant RT for gastric cancer to minimize the normal tissue irradiated. Dosimetric analyses of AP/PA versus CT-based 3D conformal radiotherapy (3DCRT) plans have shown reduced doses to the kidneys using 3DCRT.⁽¹⁾ Clinical studies have demonstrated a decrement in renal function after adjuvant RT for gastric cancer which may be reduced by using 3-D treatment planning techniques.⁽²⁾ DVHs are used to evaluate normal tissue doses and to limit the doses to surrounding organs based on the known radiation tolerance doses of these organs.

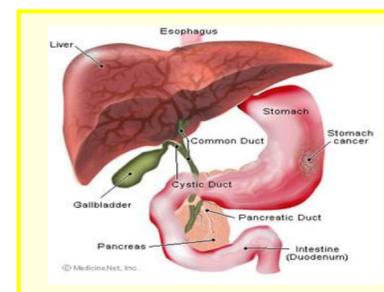
Quantifiable Measure: The percentage of patients receiving radiation whose treatment planning included the generation of DVHs to evaluate normal tissue doses to the kidneys and liver compared with all patients who received RT who underwent CT-based simulation and treatment planning.

CURRENT PERFORMANCE MEASURE #2

Completion of the planned RT course within the prescribed time frame

Rationale: Completion of RT without prolonged treatment breaks has been associated with improved clinical outcomes for several tumor sites, including head and neck, cervical and anal canal carcinomas.⁽³⁻⁷⁾ Adjuvant chemoradiotherapy for gastric cancer can be associated with large RT fields and significant acute toxicity.⁽⁸⁾ In the Intergroup 0116 trial, 41% of patients reported grade 3-4 toxicity, with 17% unable to complete the protocol RT course. Improved planning techniques to spare normal tissue are now being introduced and fewer patients should require prolonged treatment breaks or discontinuation of RT.

Quantifiable Measure: The percentage of patients with gastric cancer receiving adjuvant or neoadjuvant RT who complete RT within 33 to 45 days compared with all patients with gastric cancer who received adjuvant or neoadjuvant RT.



Results

Demographics

- A total of 250 eligible pts treated for gastric cancer from 45 institutions have been reviewed to date.
- Six facilities had no eligible patients.
- Median age was 62 years
- 66% male; 60% Caucasian
- AJCC 2002 pathologic stage was :13% stage I, 29% II, 32% IIIA, 10% IIIB, and 12% IV
- Most pts (43%) were treated at academic centers with the remainder split between large non-academic centers (32%) and medium-small facilities (25%)

Current Performance Measures

CURRENT PERFORMANCE MEASURE #1A

Use of CT-based simulation and treatment planning.
 Yes: **99.6%** (249/250)

CURRENT PERFORMANCE MEASURE #1B

Use of DVH to evaluate normal tissue doses to the kidneys and liver.
 Yes: **75%** (187/249)*

* Use of CT-based treatment plan recorded as unknown is not in the denominator (n=1)
 DVH for kidneys &/or Liver recorded as unknown is treated as "No" in the numerator (n=4)

CURRENT PERFORMANCE MEASURE #2

Completion of planned RT course within the prescribed time frame.
 Yes: **71%** (135/191)*

* Denominator includes only patients who underwent a surgical resection (n=191); Status of surgical resection unknown in 4 cases.

Conclusions

- Our selected data suggest that CT-based planning, use of DVH's and timely delivery of radiotherapy have been successfully adopted into the management of gastric cancer in the U.S.
- QRRO will provide actual patterns of care to participating facilities to help identify areas for improvement in the adoption of evidence based recommendations for the use of CRT for gastric cancer.
- Facility participation in QRRO process surveys and quality improvement activities will be accepted as a Practice Quality Improvement Initiative (PQI) for accrediting agencies.

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