
# La terapia di supporto in radioterapia oncologica

# DISTRETTO ADDOMINALE SUPERIORE

**Ernesto MARANZANO**
Dipartimento di Oncologia,
S.C. di Radioterapia Oncologica,
Az. Ospedaliera, **Terni**

*28 ottobre 2013*


# Radiotherapy-induced side effects/toxicity

1. **Prevention** of acute (& late) toxicity
2. **Treatment/supportive therapy** of acute toxicity
    a. **Organ-specific toxicity ( i.e., nausea, vomiting, diarrhea )**
    b. **Evaluation of fatigue, distress & QoL**


# Radiotherapy-induced side effects/toxicity

1. **Prevention** of acute (& late) toxicity
2. Treatment/supportive therapy of acute toxicity
    a. Organ-specific toxicity ( i.e., nausea, vomiting, diarrhea )
    b. Evaluation of fatigue, distress & QoL

Practical Radiation Oncology (2013) 3, 40–44

# Gastric perforation following stereotactic body radiation therapy of hepatic metastasis from colon cancer

Matthew J. Furman MD [a,*], Giles F. Whalen MD [a], Shimul A. Shah MD [a], Sidney P. Kadish MD [b]

[a]*Department of Surgery, University of Massachusetts Medical School, Worcester, Massachusetts*
[b]*Department of Radiation Oncology, University of Massachusetts Medical School, Worcester, Massachusetts*

practical radiation oncology
pro
www.practicalradonc.org

- Gastric perforation after **SBRT** **to a liver metastasis from colon cancer**
- **10 fractions of 5 Gy each for a total of 50 Gy**
- **No oral contrast for the delineation of the gastric wall**

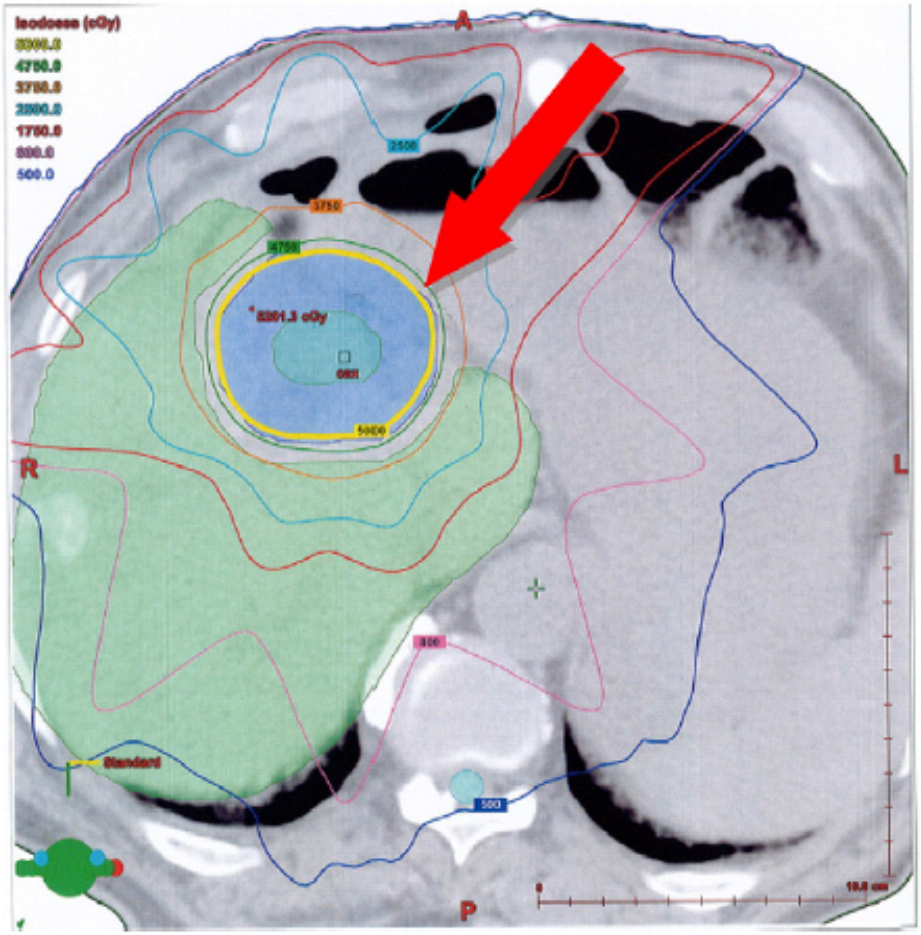



**Figure 1** SBRT simulation depicting the suspected gastric wall and hepatic tumor border. The arrow marks the suspected gastric wall and hepatic tumor border. In the absence of oral contrast the delineation of the gastric borders is difficult.

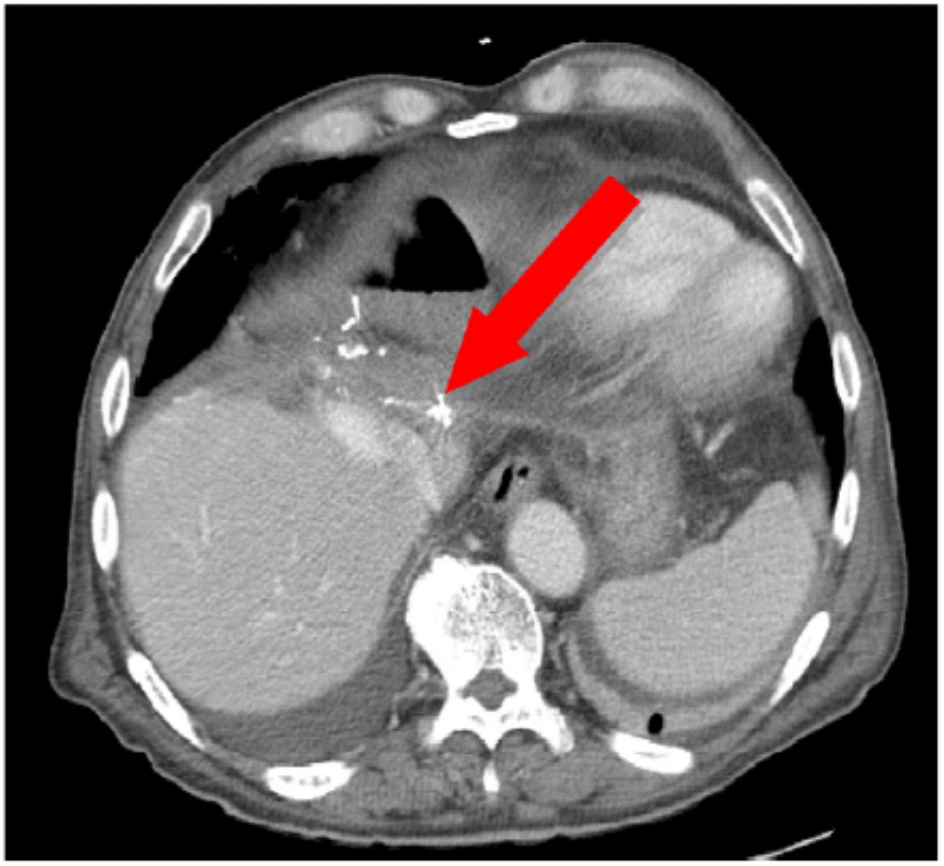


**Figure 2** Computed tomography scan depicting the gastrohepatic fistula; surgical clips clearly seen at cut liver edge. The arrow marks the gastrohepatic fistula; surgical clips are clearly seen at cut liver edge.

practical radiation oncology
pro
www.practicalradonc.org

Practical Radiation Oncology (2013) **3**, 147–148

Commentary

# Gastrointestinal stereotactic body radiation therapy requires detailed normal tissue planning to prevent long-term complications

**Rachit Kumar MD, Joseph M. Herman MD, MSc***

*Department of Radiation Oncology & Molecular Radiation Sciences, Sidney Kimmel Comprehensive Cancer Johns Hopkins University School of Medicine, Baltimore, Maryland*

Int J Radiation Oncol Biol Phys, Vol. 86, No. 3, pp. 516–522, 2013

# Stereotactic Body Radiation Therapy for Locally Advanced and Borderline Resectable Pancreatic Cancer Is Effective and Well Tolerated

Michael D. Chuong, MD,* Gregory M. Springett, MD, PhD,† Jessica M. Freilich, MD,*

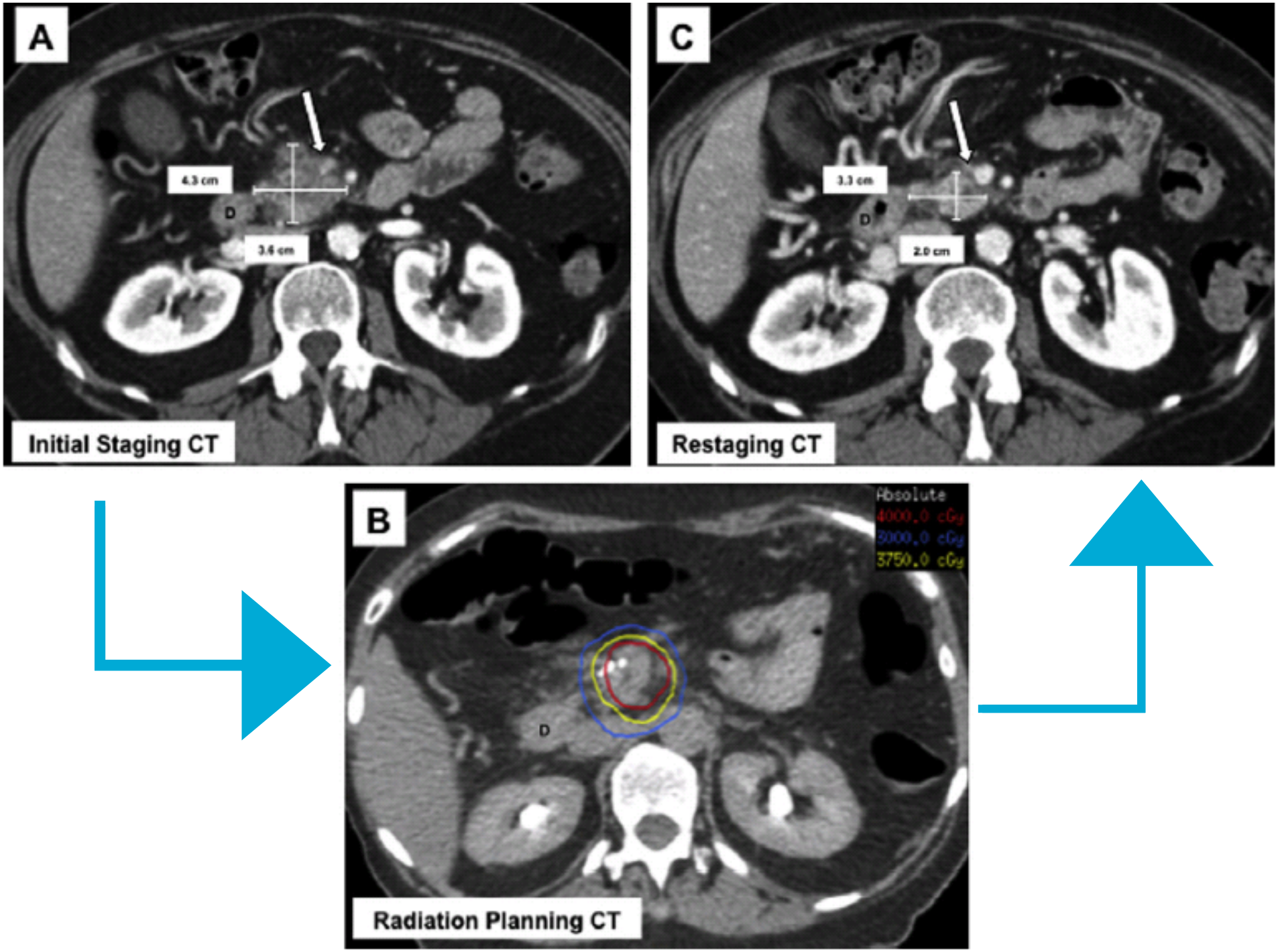
**SBRT** median doses of **35** Gy and **25** Gy in 5 consecutive daily fractions were delivered to the region of vessel involvement and the remainder of the tumor, respectively.

*Treatment-related toxicity*

The most common acute adverse effect was grade 1 to 2 fatigue or nausea. 5% patients experienced late grade 3, GI bleeding or anorexia toxicity

*Conclusions:*

SBRT safely facilitates margin-negative resection in patients with borderline resectable pancreatic cancer while maintaining a high rate of LC in unresectable patients. These data support the expanded implementation of SBRT for pancreatic cancer.


A
4.3 cm
D
3.6 cm
Initial Staging CT
C
3.3 cm
D
2.0 cm
Restaging CT
B
Absolute
4000.0 cGy
3750.0 cGy
D
Radiation Planning CT

Int J Radiation Oncol Biol Phys, Vol. 86, No. 3, pp. 516–522, 2013

# Stereotactic Body Radiation Therapy for Locally Advanced and Borderline Resectable Pancreatic Cancer Is Effective and Well Tolerated

Michael D. Chuong, MD,* Gregory M. Springett, MD, PhD,† Jessica M. Freilich, MD,*

SBRT median doses of 35 Gy and 25 Gy in 5 consecutive daily fractions were delivered to the region of vessel involvement and the remainder of the tumor, respectively.

## *Treatment-related toxicity*

The most common acute adverse effect was grade 1 to 2 **fatigue** or **nausea**. 5% patients experienced late grade 3, **GI bleeding** or **anorexia** toxicity

## *Conclusions:*

**SBRT** safely facilitates margin-negative resection in patients with borderline resectable pancreatic cancer while maintaining a high rate of LC in unresectable patients. These data support the expanded implementation of SBRT for pancreatic cancer.

VOLUME 26 · NUMBER 14 · MAY 10 2008

JOURNAL OF CLINICAL ONCOLOGY

DIAGNOSIS IN ONCOLOGY

# Bowel Perforation After Radiotherapy in a Patient Receiving Sorafenib

*Natascha A.J.B. Peters and Dick J. Richel*

Department of Experimental Oncology, Academic Medical Center, Amsterdam, the Netherlands

*Joost J.C. Verhoeff and Lukas J.A. Stalpers*

Department of Radiation Oncology, Academic Medical Center, Amsterdam, the Netherlands

**CASE REPORT**

# Scenario

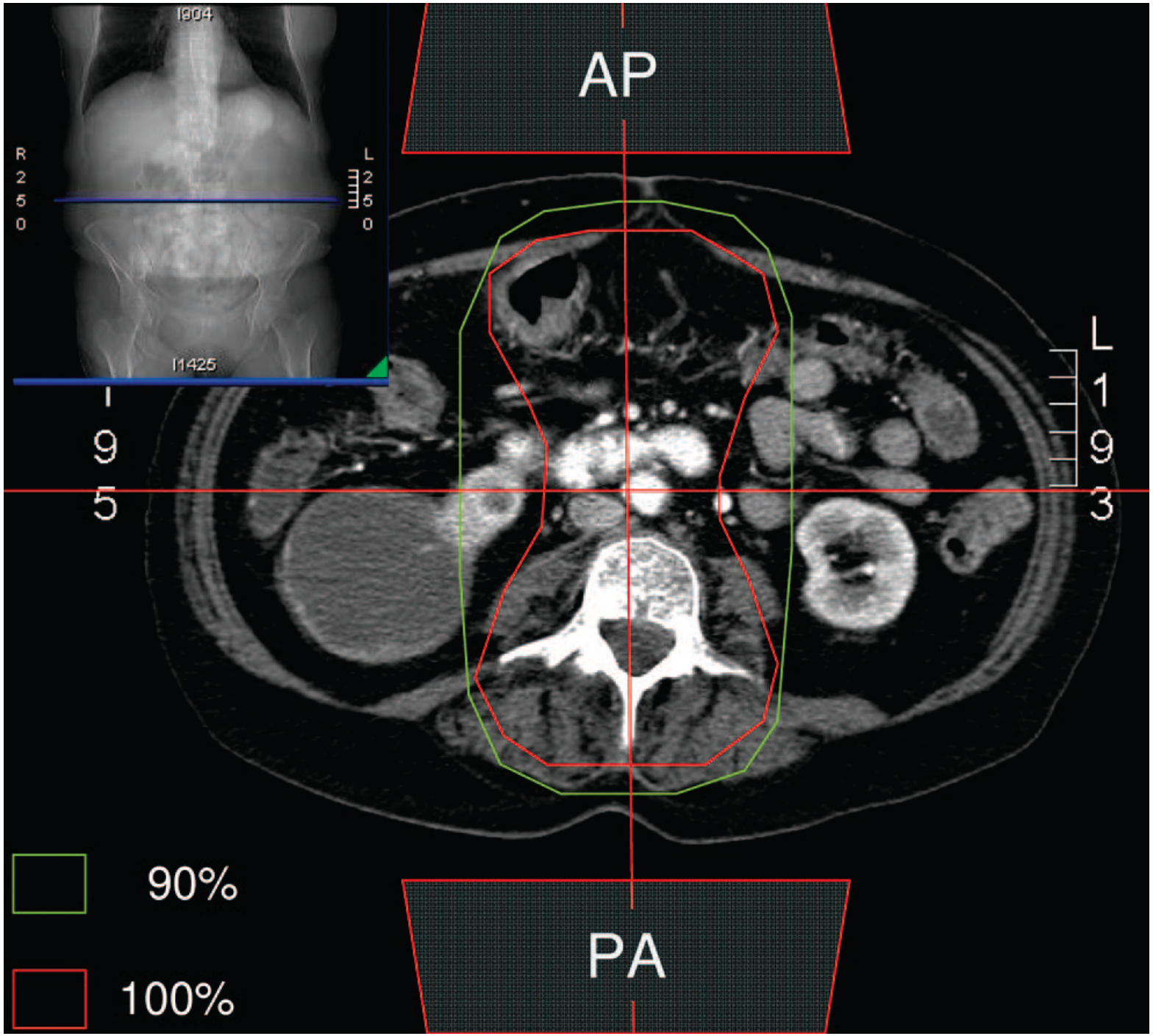
- 61-year-old woman with renal cell carcinoma (clear-cell type) and cutaneous metastases.

- Sorafenib as a first line treatment, 400 mg twice a day.

- Five weeks later, severe low back pain. At MRI lytic bone metastasis of the L4.

- Palliative radiotherapy on L3-L5 (8 Gy in one fraction).

- *Worthy to note*: Sorafenib was stopped 2 days before RT and started again 3 days later.


I804
R
2
5
0
L
2
5
0
I1425
I
9
5
AP
L
1
9
3
90%
100%
PA

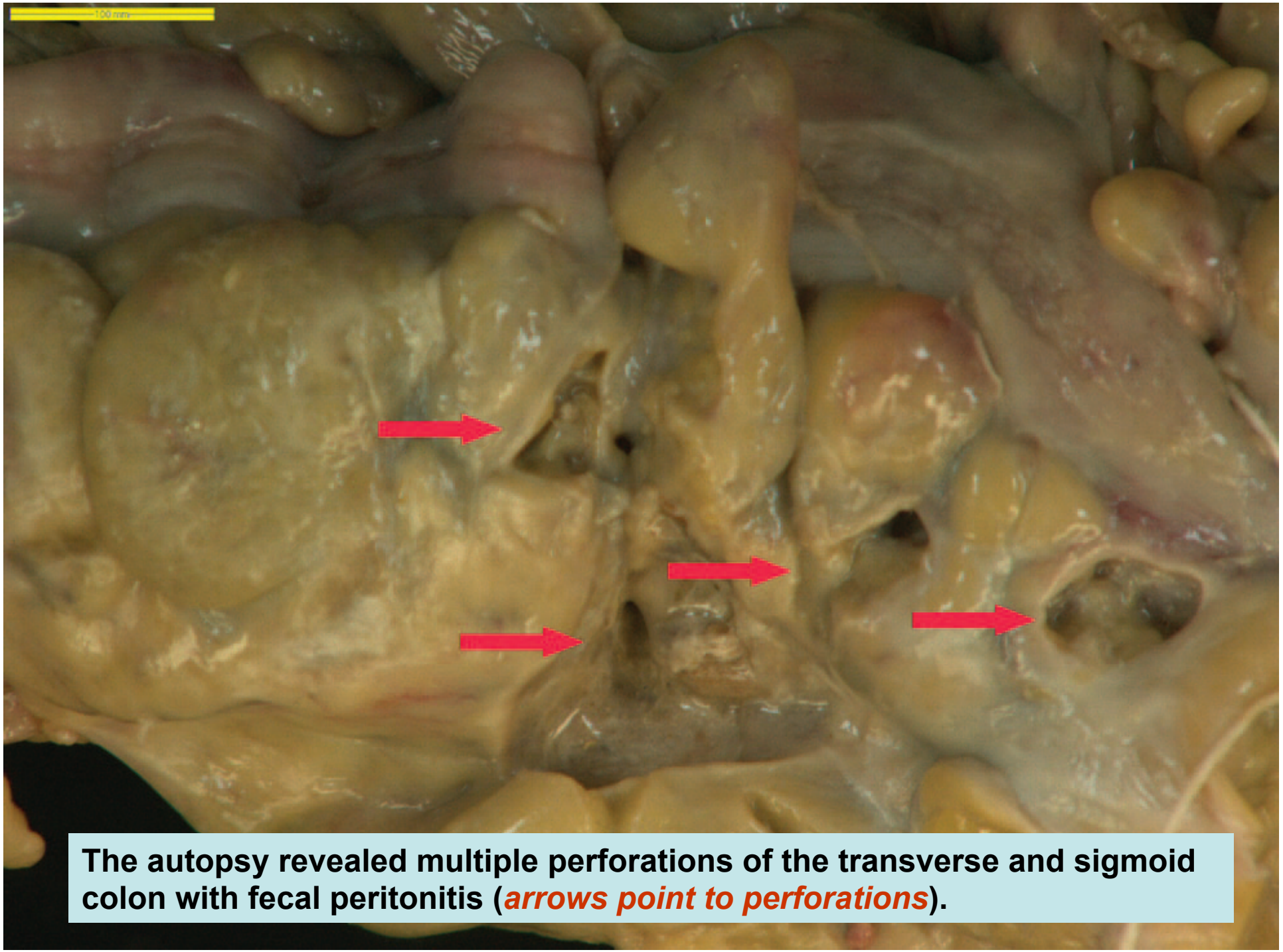
# Scenario

- One week after radiotherapy the patient was admitted to hospital with abdominal pain, diarrhea, and dehydration.

- She died the next day.

- The autopsy revealed multiple perforations of the transverse and sigmoid colon with fecal peritonitis.

- Biopsy specimens of the colon showed ischemic enteritis with radiation-effects and vascular changes with thrombus formation, but no evidence of tumor metastases



The autopsy revealed multiple perforations of the transverse and sigmoid colon with fecal peritonitis (*arrows point to perforations*).

VOLUME 26 · NUMBER 14 · MAY 10 2008

JOURNAL OF CLINICAL ONCOLOGY

DIAGNOSIS IN ONCOLOGY

# Bowel Perforation After Radiotherapy in a Patient Receiving Sorafenib

## What was the cause/s of this so severe toxicity?

## POSSIBLE CAUSES OF THIS SO SEVERE TOXICITY

✓ **Sorafenib?**

**It could be**. Intestinal perforation is reported as a ***rare*** Sorafenib-induced side effect

✓ **Radiotherapy dose?**

**Probably not**. 8-Gy single dose does not exceed the 25 x 2Gy considered the maximum intestinal tolerated dose

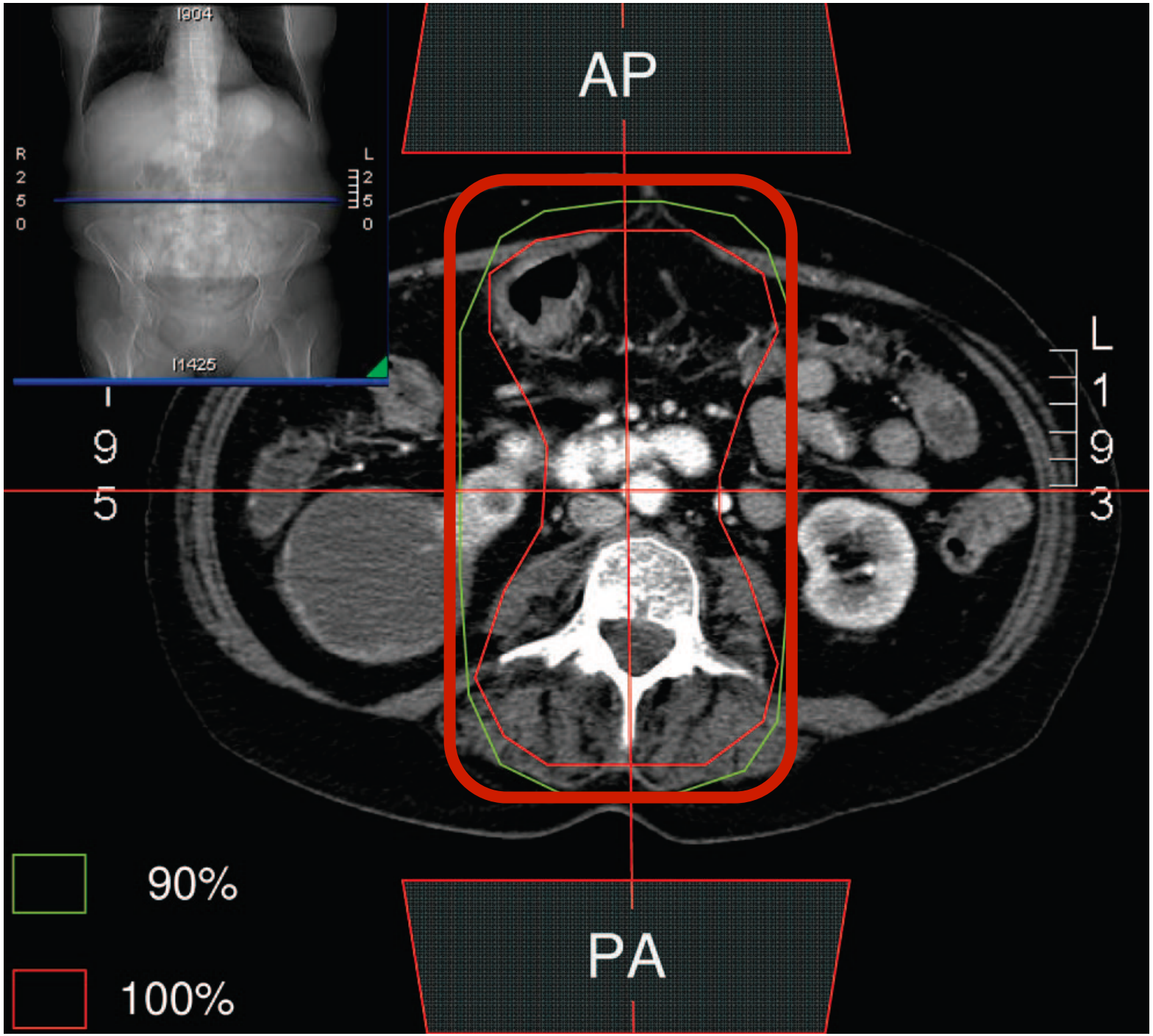
## POSSIBLE CAUSES OF THIS SO SEVERE TOXICITY

✓ **Timing of Sorafenib & RT association?**

**Probably yes**. Too few days between interruption of Sorafenib and RT administration

✓ **Radiotherapy technique?**

**Probably yes!**


I804
R
2
5
0
L
2
5
0
I1425
I
9
5
AP
L
1
9
3
90%
100%
PA


# Radiotherapy-induced side effects/toxicity

**Prevention** of acute (& late) toxicity

**Radiation Oncologist is a clinician who:**

- **has to prescribe RT using the right technique/technology (in palliative setting too);**
- **has to know drugs and their side effects;**
- **has to know the previous treatment administered to each patient and suggest the optimal timing between chemo/targeted therapy and RT.**


# Radiotherapy-induced side effects/toxicity

1. Prevention of acute (& late) toxicity
2. **Treatment/supportive therapy** of acute toxicity
    a. **Organ-specific toxicity ( i.e., nausea, vomiting, diarrhea )**
    b. Evaluation of fatigue, distress & QoL

# Evidence-based recommendations for the use of antiemetics in radiotherapy

Ernesto Maranzano[a,*], Petra Ch. Feyer[b], Alexander Molassiotis[c], Romina Rossi[a], Rebecca A. Clark-Snow[d], Ian Olver[e], David Warr[f], Concetta Schiavone[g], Fausto Roila on behalf of Participants in the Perugia Consensus Conference 2004

**Radiother Oncol**. **2005** Sep;76(3):227-33

**Table 1. Antiemetic guidelines for management of radiotherapy-induced nausea and vomiting.**

| Emetic risk level | Site/radiotherapy | Recommendation |
|---|---|---|
| *MASCC/ESMO* | | |
| High | TBI | Prophylaxis with a 5-$HT_3$RA + Dex |
| Moderate | Upper abdomen, HBI, UBI | Prophylaxis with a 5-$HT_3$RA ± Dex (Dex for days 1–5) |
| Low | Cranium (all), craniospinal, head and neck, lower thorax, pelvis | Prophylaxis or rescue with a 5-$HT_3$RA |
| Minimal | Extremities, breast | Rescue with a dopamine RA or a 5-$HT_3$RA |

Radiotherapy and Oncology 94 (2010) 36–41

Contents lists available at ScienceDirect

Radiotherapy and Oncology 2010

journal homepage: www.thegreenjournal.com

Emesis in radiotherapy

# A prospective observational trial on emesis in radiotherapy: Analysis of 1020 patients recruited in 45 Italian radiation oncology centres

Ernesto Maranzano [a,*], Verena De Angelis [b], Stefano Pergolizzi [c], Marco Lupattelli [d], Paolo Frata [e], Stefano Spagnesi [f], Maria Luisa Frisio [g], Giovanni Mandoliti [h], Giuseppe Malinverni [i], Fabio Trippa [a], Letizia Fabbietti [j], Salvatore Parisi [k], Annamaria Di Palma [a], Pietro De Vecchi [l], Costantino De Renzis [m], Celestino Giorgetti [n], Tiziano Bergami [o], Roberto Orecchia [p], Maurizio Portaluri [q], Marco Signor [r], Davide Di Gennaro [s], on behalf of The Italian Group for Antiemetic Research in Radiotherapy – IGARR

- **45 Italian radiation oncology centres & 1020 recruited patients**
- **Emesis occurred in 27.9% patients.**
- **Statistically significant risk factors were concomitant chemotherapy, previous experience of vomiting, irradiated site (upper abdomen) and field size (>400 $cm^2$).**
- **An antiemetic drug was given only to a minority (17%) of patients receiving RT, and the prescriptions were prophylactic in 12.4% and symptomatic in 4.6%.**
- **Different compounds and a wide range of doses and schedules were used**

Int J Radiation Oncol Biol Phys, Vol. 84, No. 1, pp. e49–e60, 2012

# International Patterns of Practice in the Management of Radiation Therapy-induced Nausea and Vomiting

Kristopher Dennis, MD,* Liying Zhang, PhD,* Stephen Lutz, MD,†
Angela van Baardwijk, MD, PhD,‡ Yvette van der Linden, MD,§ Tanya Holt, MBBS,‖
Palmira Foro Arnalot, MD,¶ Jean-Léon Lagrange, MD, PhD,** Ernesto Maranzano, MD,††
Rico Liu, MBBS,‡‡ Kam-Hung Wong, MBBS,§§ Lea-Choung Wong, MBBS,‖‖
Vassilios Vassiliou, MD, PhD,¶¶ Benjamin W. Corn, MD,*** Carlo De Angelis, PharmD,*
Lori Holden, MRT(T),* C. Shun Wong, MD,* and Edward Chow, MBBS, PhD*

***Purpose***: To investigate **international patterns of practice** in the management of radiation therapy-induced nausea and vomiting (RINV).

***Results***: In total, **1022 responses** were received. Risk estimates and management decisions for the minimal- and high-risk cases varied little and were in line with guideline standards, whereas those for the low- and moderate-risk cases varied greatly. The serotonin (5-HT3) receptor antagonists were the most commonly recommended prophylactic agents.

***Conclusions***: RINV are under-studied treatment sequelae. New observational and translational studies are needed to allow for individual patient risk assessment and to refine antiemetic guideline management recommendations.

Support Care Cancer February 2013

# International radiation oncology trainee decision making in the management of radiotherapy-induced nausea and vomiting

Kristopher Dennis · Liying Zhang · Stephen Lutz · Yvette van der Linden · Angela van Baardwijk · Tanya Holt · Jean-Leon Lagrange · Palmira Foro-Arnalot · Lea-Choung Wong · Ernesto Maranzano · Kam-Hung Wong · Rico Liu · Vassilios Vassiliou · Benjamin W. Corn · Carlo De Angelis · Lori Holden · C. Shun Wong · Edward Chow

## *Results*

**176 trainees** from 11 countries responded.

Only **28 %** were **aware of any anti-emetic guideline (!)**.

# Timing and duration of 5-$HT_3$ receptor antagonist therapy for the prophylaxis of radiotherapy-induced nausea and vomiting: a systematic review of randomized and non-randomized studies

Kristopher Dennis · Leila Makhani · Ernesto Maranzano · Petra Feyer · Liang Zeng · Carlo De Angelis · Lori Holden · C. Shun Wong · Edward Chow

J Radiat Oncol (2013) 2:271–284

***Results***

Of the 11 high-emetic-risk radiotherapy cohorts:
2, **8 (73%)**, and 1 received 5-HT3RAs for durations longer than, **equal to**, or shorter than the **duration of RT**, respectively.

Of the 22 moderate or low-emetic-risk radiotherapy cohorts:
5, **14 (64%)**, and 3 received 5-HT3RAs for durations longer than, **equal to**, or shorter than the **duration of RT**, respectively.

***Conclusion***

Future studies should compare different timings and durations of therapy with common efficacy endpoints to develop effective and cost-efficient antiemetic strategies.

National Comprehensive Cancer Network®

# NCCN Guidelines® Version 2013
# Antiemesis

## RADIATION-INDUCED EMESIS PREVENTION/TREATMENT

| EMETOGENIC POTENTIAL | TYPE OF RADIATION THERAPY | |
|---|---|---|
| Radiation-induced nausea/vomiting | Radiation therapy (RT) - upper abdomen/localized sites | Start pretreatment for each day of RT treatment:[e]<br>• Granisetron 2 mg PO daily<br>or<br>• Ondansetron 8 mg PO BID<br>• ± Dexamethasone 4 mg PO daily |
| | Total body irradiation (TBI) | Start pretreatment for each day of RT treatment:[e]<br>• Granisetron 2 mg PO daily<br>or<br>• Ondansetron 8 mg PO BID-TID[f]<br>• ± Dexamethasone 4 mg PO daily |
| | Chemotherapy and RT (including TBI) | See emesis prevention for chemotherapy-induce<br>(High AE-2, Moderate AE-3, Low AE-4, and Oral A |

Digestive and Liver Disease 45 (2013) 933–937

# Diarrhoea in irradiated patients: A prospective multicentre observational study

Stefano Pergolizzi[a,*], Ernesto Maranzano[b], Verena De Angelis[b], Marco Lupattelli[b], Paolo Frata[b], Stefano Spagnesi[b], Maria Luisa Frisio[b], Giovanni Mandoliti[b], Pietro Delia[a], Giuseppe Malinverni[b], Fabio Trippa[b], Letizia Fabbietti[b], Salvatore Parisi[b], Pietro De Vecchi[b], Giuseppe Sansotta[a], Celestino Giorgetti[b], Tiziano Bergami[b], Roberto Orecchia[b], Maurizio Portaluri[b], Marco Signor[b], Antonio Pontoriero[a], Anna Santacaterina[b], Davide Di Gennaro[b], On behalf of The Italian Group for Antiemetic Research in Radiotherapy – IGARR

- **45 Italian radiation oncology centres & 1020 recruited patients**
- **82/147 (14.6%) pts had diarrhoea. The median minimum number of daily events was 1 (range 1–7) with a median maximum events of 3 (range 1–23).**
- **Statistically significant risk factors were concomitant tumour site (abdomen-pelvis), therapeutic purpose and field size (>400 cm2).**
- **82/147 pts (56.2%) had a drug prescription for diarrhoea**
- **Different drugs and a wide range of doses and schedules were used**

JOURNAL OF CLINICAL ONCOLOGY | SPECIAL ARTICLE | 2004

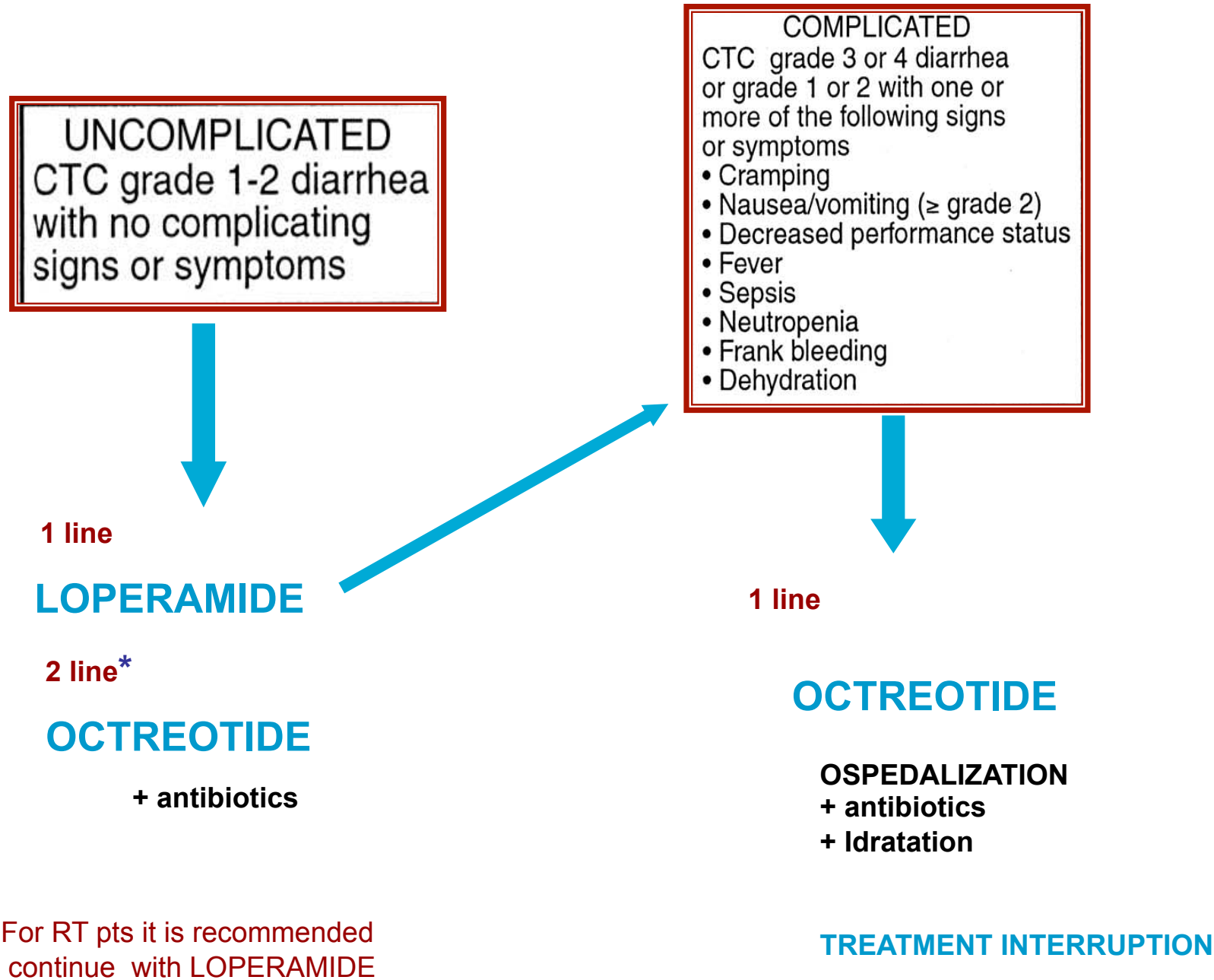
J Clin Oncol. 2004 Jul 15;22(14):2918-26.

# Recommended guidelines for the treatment of cancer treatment-induced diarrhea.

Benson AB 3rd, Ajani JA, Catalano RB, Engelking C, Kornblau SM, Martenson JA Jr, McCallum R, Mitchell EP, O'Dorisio TM, Vokes EE, Wadler S.

## Common Terminology Criteria for Adverse Events (CTCAE)

| Gastrointestinal disorders | | | | | |
|---|---|---|---|---|---|
| | Grade | | | | |
| Adverse Event | 1 | 2 | 3 | 4 | 5 |
| **Diarrhea** | Increase of <4 stools per day over baseline; mild increase in ostomy output compared to baseline | Increase of 4 - 6 stools per day over baseline; moderate increase in ostomy output compared to baseline | Increase of >=7 stools per day over baseline; incontinence; hospitalization indicated; severe increase in ostomy output compared to baseline; limiting self care ADL | Life-threatening consequences; urgent intervention indicated | Death |
| Definition: A disorder characterized by frequent and watery bowel movements. | | | | | |




* For RT pts it is recommended to continue with LOPERAMIDE

National Cancer Institute

Managing Radiation Therapy Side Effects

# What to do when you have loose stools (diarrhea)

"Diarrhea kept me from going out and doing things. My nurse told me how important it was to drink more liquids. Drinking more water and avoiding certain foods helped me feel a lot better."

# HOW PREVENT RT-INDUCED DIARRHEA: N.C.I. SUGGESTIONS

**These foods and drinks may be easy on your stomach until you feel better:**

| **Soups** (clear liquids) | **Drinks** (clear liquids) | **Meals and snacks** | **Fruits and other foods** |
|---|---|---|---|
| • Clear broth, such as chicken, vegetable, and beef | • Clear soda, such as ginger ale<br>• Cranberry or grape juice<br>• Oral rehydration solution drinks, such as Pedialyte®<br>• Tea<br>• Water | • Chicken—broiled or baked, without the skin<br>• Crackers<br>• Cream of wheat or rice cereal<br>• Noodles<br>• Oatmeal<br>• Potatoes—boiled, without the skin<br>• Pretzels<br>• White rice<br>• White toast | • Applesauce<br>• Bananas<br>• Canned fruit, such as peaches and pears<br>• Gelatin (such as Jell-O®)<br>**Most canned or cooked fruits and vegetables without seeds or skins are easy on your stomach.** |
|  |  | |  |

Servizio Sanitario Nazionale

Regione Umbria

AZIENDA OSPEDALIERA SANTA MARIA TERNI

**S.C. di RADIOTERAPIA ONCOLOGICA**
Direttore: Dr. Ernesto Maranzano
Tel. 0744/205729 - Fax: 0744/205034

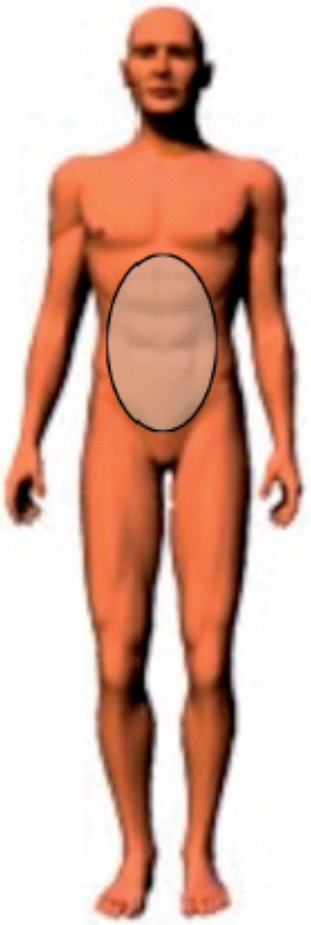
# LA RADIOTERAPIA ONCOLOGICA

## Guida pratica per il malato e i suoi familiari

## CIBI PERMESSI

- **Cereali:** Pane bianco, fette biscottate bianche, cracker e grissini comuni, fiocchi d'avena, riso, pasta e semolino
- **Verdure:** Carote, verdura cotta non a foglia, minestre di verdura passata, patate bollite a purea o al forno, zucchine
- **Frutta:** Mele (preferibile frullata e senza buccia), banane e spremute di agrumi
- **Uova:** Altri tipi di cottura
- **Formaggi:** Magri e freschi
- **Carni:** Bianche o rosse purché poco grasse
- **Pesce:** Lesso, al forno o alla brace ma con condimenti leggeri
- **Bevande:** Acqua, camomilla, caffè d'orzo, succhi di frutta, yogurt, succo di limone
- **Dolci:** dolci poco elaborati e poco grassi, crostate, biscotti non integrali, gelati alla frutta

# LA RADIOTERAPIA DELL'ADDOME



Gli effetti collaterali più frequenti del trattamento radiante sull'addome sono rappresentati da nausea, vomito e diarrea. Questi sono tanto più importanti quanto più ampia è la zona irradiata.

## Nausea e/o vomito

Se il paziente ha nausea e/o vomito, deve cercare di fare pasti piccoli e frequenti, mangiare cibi asciutti, non dovrebbe bere durante i pasti ma circa un'ora prima o dopo. Deve poi evitare odori che potrebbero aumentare il senso di nausea.
Il medico, se necessario, potrà risolvere questo disturbo con l'aiuto di farmaci.

## Diarrea

Il paziente deve essere correttamente informato sul tipo di alimentazione da seguire prima di iniziare il trattamento, poiché ciò può ridurre sensibilmente l'entità di tale disturbo. In particolare si consiglia di bere circa 1,5-2 litri al giorno di liquidi per mantenere idratato il corpo.

## Disturbi urinari

La radioterapia sull'addome può causare con una certa frequenza disturbi urinari; il paziente può infatti avere la necessità di urinare più spesso anche con urgenza, accusare bruciore e senso di pressione o di corpo estraneo oppure uno stimolo continuo ad urinare. Anche in questo caso è importante bere molto (circa 1,5-2 litri di liquidi al giorno).

## Attività sessuale

Durante il ciclo di radioterapia, il paziente potrà notare dei cambiamenti nella sua attività sessuale, specie una riduzione del desiderio e della potenza. Questi disturbi variano molto da persona a persona, hanno spesso una componente psicologica e sono limitati al periodo di trattamento.

## SUGGERIMENTI DIETETICI PER PAZIENTI IRRADIATI SULL'ADDOME

In genere evitare cibi fritti o soffritti, sughi grassi o piccanti, spezie come pepe e peperoncino, cacao

### CIBI DA EVITARE

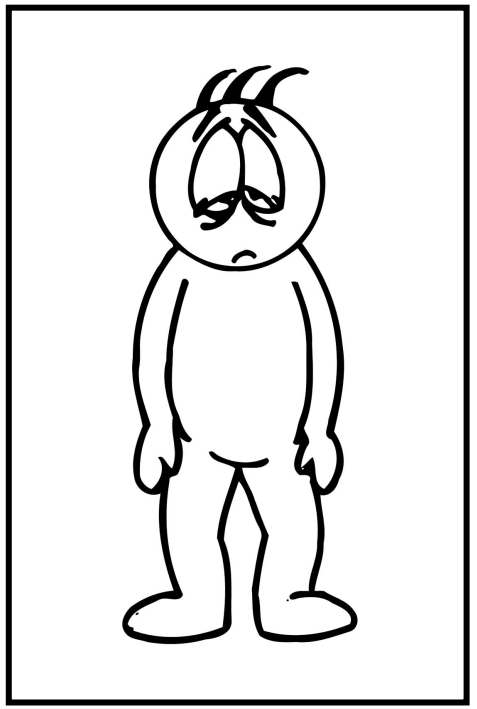
- **Cereali:** tutti i cereali integrali (pane, fette biscottate, biscotti o cracker)
- **Verdure:** insalate crude, legumi, carciofi, catalogna, cime di rape, bietola, spinaci, cavoli,cavolfiori, broccoli
- **Frutta:** prugne,fichi,fragole, mirtilli,lamponi, ribes, mele cotogne, more, noci, nocciole, datteri, mandorle, pinoli, avocado, cocco fresco, tutta la frutta secca
- **Uova:** fritte, frittate
- **Formaggi:** piccanti e molto grassi o stagionati
- **Carni:** maiale nelle sue parti più grasse, insaccati, frattaglie, trippa, carni affumicate
- **Pesce:** anguilla e pesce grasso in genere, frutti di mare e fritture
- **Bevande:** gasate, fredde, caffè, latte, cioccolato, alcoliche
- **Dolci:** creme, dolci a base di frutta secca e fresca, panna, cacao, gelati di crema


# Radiotherapy-induced side effects/toxicity

1. Prevention of acute (& late) toxicity
2. Treatment/supportive therapy of acute toxicity
    a. Organ-specific toxicity ( i.e., nausea, vomiting, diarrhea )
    **b. Evaluation of fatigue, distress & QoL**

# What Is FATIGUE?

It is an illness characterized by prolonged, debilitating, weakness severe enough to affect one or more aspects of a person's life. It is also characterized by multiple nonspecific symptoms such as headaches, recurrent sore throats, muscle/joint pains, memory and concentration difficulties.



European Journal of Cancer (2013) **49**, 1957–1966

Quantifying fatigue in (long-term) colorectal cancer survivors: A study from the population-based Patient Reported Outcomes Following Initial treatment and Long term Evaluation of Survivorship registry

Melissa S.Y. Thong [a,b,*], Floortje Mols [a,b], Xin S. Wang [c], Valery E.P.P. Lemmens [b,d], Tineke J. Smilde [e], Lonneke V. van de Poll-Franse [a,b]

# What Is DISTRESS?

Distress is a multifactorial unpleasant emotional experience of a psychological (cognitive, behavioral, emotional) and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment


Support Care Cancer (2013) 21:1043–1051
DOI 10.1007/s00520-012-1624-3

ORIGINAL ARTICLE

## Psychological distress in cancer patients undergoing radiation therapy treatment

L. J. Mackenzie · M. L. Carey · R. W. Sanson-Fisher · C. A. D'Este

# QoL

## Gastric cancer

Contents of the EORTC QLQ-STO22

- Multi-item scales
  - Dysphagia/odynophagia
    - Eating solid food
    - Eating soft or liquidised food
    - Drinking liquids
    - Discomfort when eating
  - Pain/discomfort
    - Pain in stomach area
    - Discomfort in stomach area
    - Abdominal bloating
  - Dietary restrictions
    - Early satiety
    - Enjoying meals
    - Eating slowly
    - Change in taste
    - Trouble eating in front of others
  - Upper gastro-intestinal symptoms
    - Reflux
    - Acid indigestion/heartburn
    - Trouble belching
  - Specific emotional problems
    - Thinking about their illness
    - Worry about weight loss
    - Worry about future health
- Single items
  - Having a dry mouth
  - Body image
  - Hair loss (two questions)

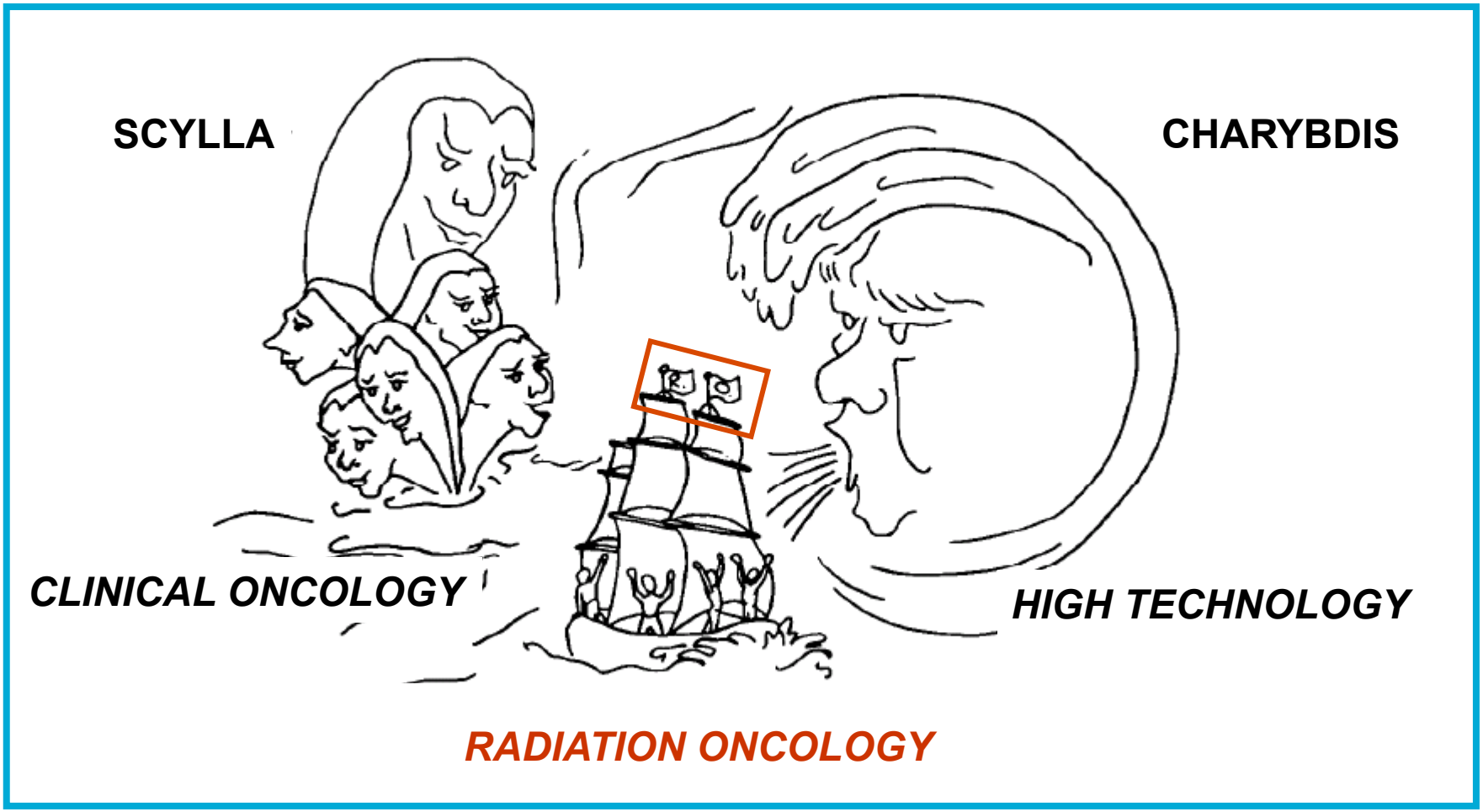
## Pancreatic cancer

*Table 2. Content of the EORTC QLQ-PAN26*

- Pain
  - Abdominal discomfort
  - Back pain
  - Position related pain
  - Night time pain
- Eating related items
  - Restriction of diet intake
  - Restriction of food types consumed
- Indigestion
- Flatulence
- Cachexia
  - Loss of muscle strength
  - Weight loss
- Hepatic
  - Jaundice
  - Pruritus
- Ascites
  - Swollen abdomen
- Body Image
  - Physical attractiveness
  - Satisfaction with body
- Side effects
  - Burden of treatment
  - Dry mouth
  - Taste changes
- Fear of future health
- Ability to plan future
- Health care satisfaction
  - Information
  - Support
- Altered bowel habit
  - Frequency of eliminati
  - Urgency of elimination
- Sexuality
  - Sexual interest
  - Sexual enjoyment


DISTRESS
FATIGUE
QoL
CLINICAL ONCOLOGY
HIGH TECHNOLOGY

# My wishful thinking




**Radiation Oncology will direct successfully between clinic (Scylla) and technology (Charybdis), and will survive as an independent discipline**

*P. Rubin, ASTRO 1980, modified*