

The nutritional support from the radiation oncologist point of view

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Introduction

Radiation therapy is one of the primary modalities for treating malignant diseases and is used in both curative and palliative settings for almost all solid tumors.

With few exceptions (TBI), is a loco-regional therapy, with toxicities related to the site of irradiation

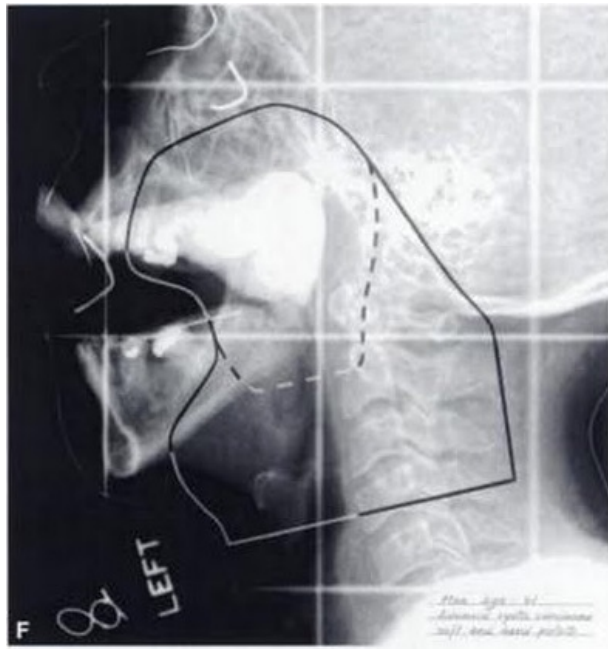
Approximately 60% of cancer patients will receive a radiation treatment during their lifetime

Modern advances in radiotherapy (IMRT, SABR, SRS, IGRT, MRI-linac, Protons) allow radoncs to better spare organs at risk

Toxicities are nonetheless a concern, especially in patients receiving concomitant systemic treatment (e.g. chemotherapy; immunotherapy)

The evolution of radiotherapy: from 2D to IMRT

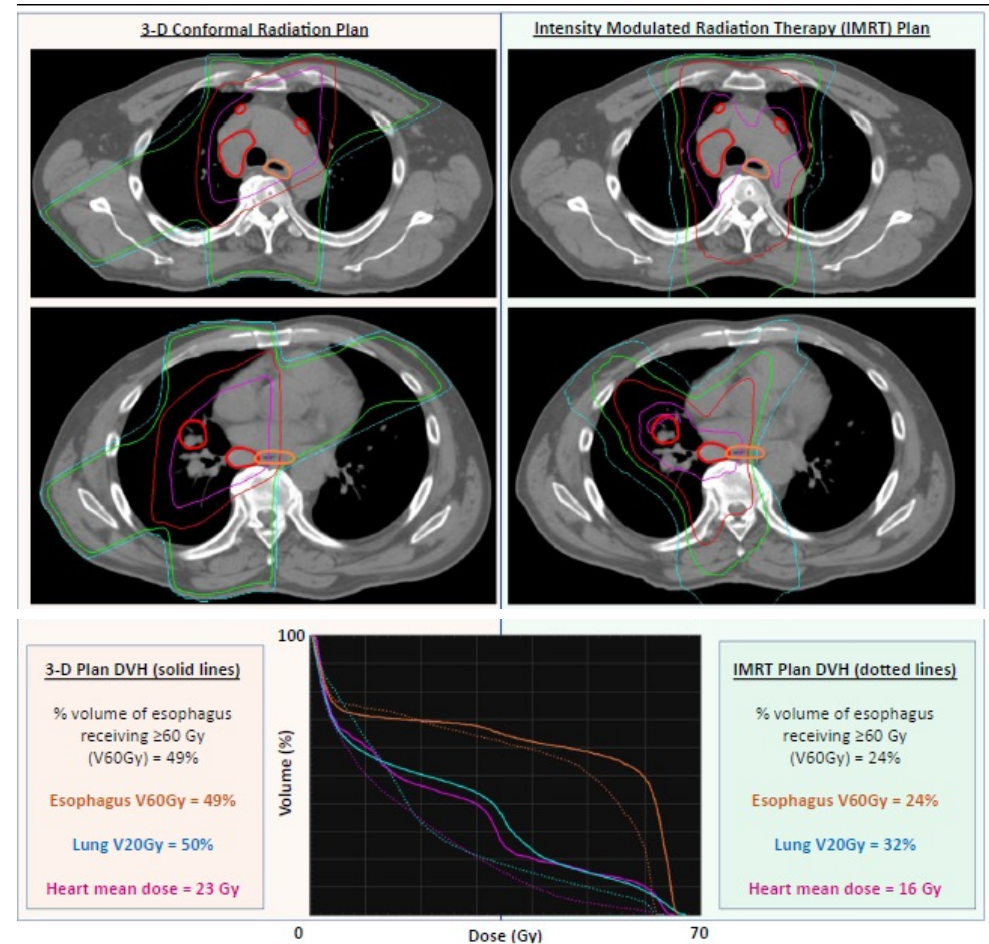
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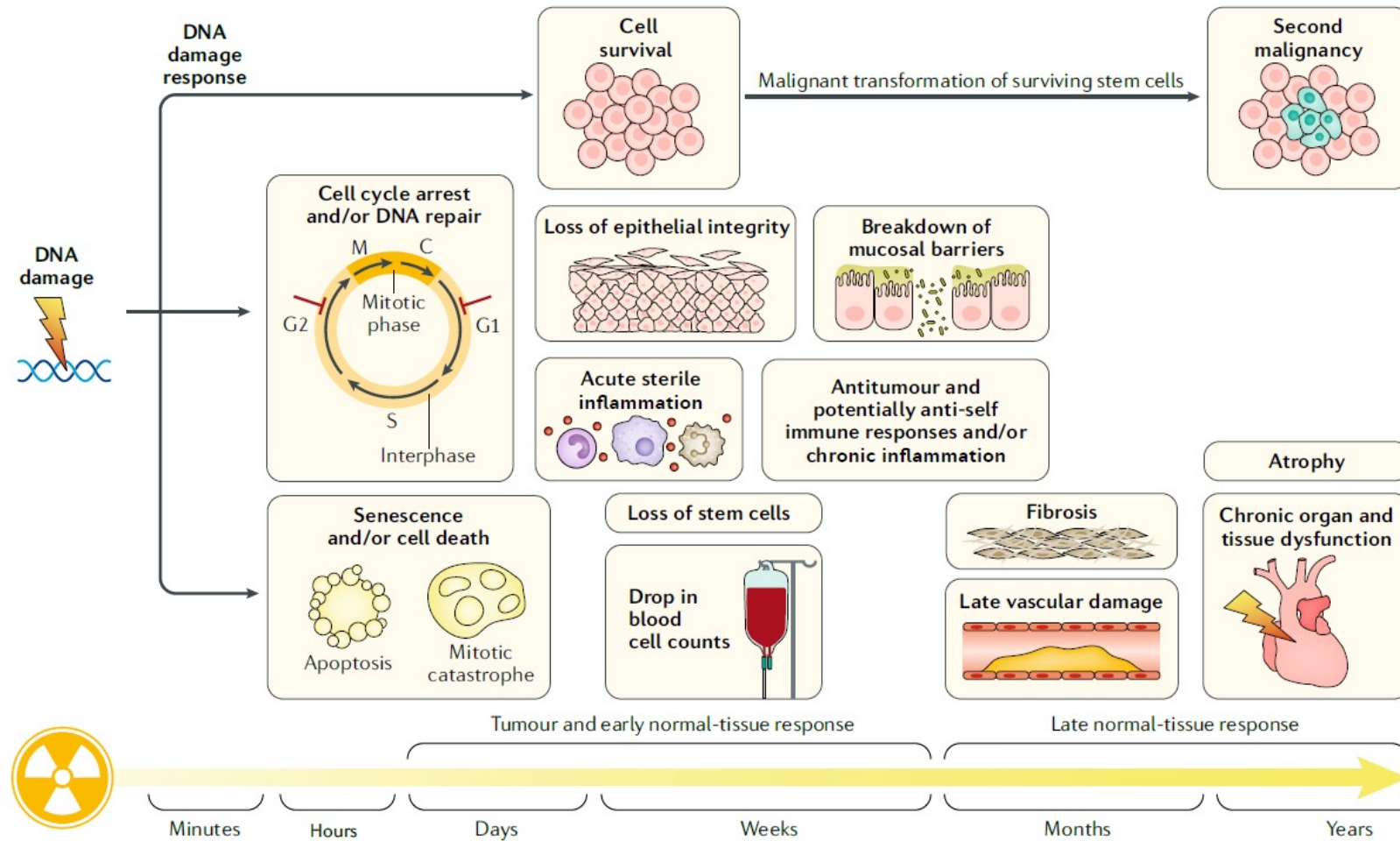
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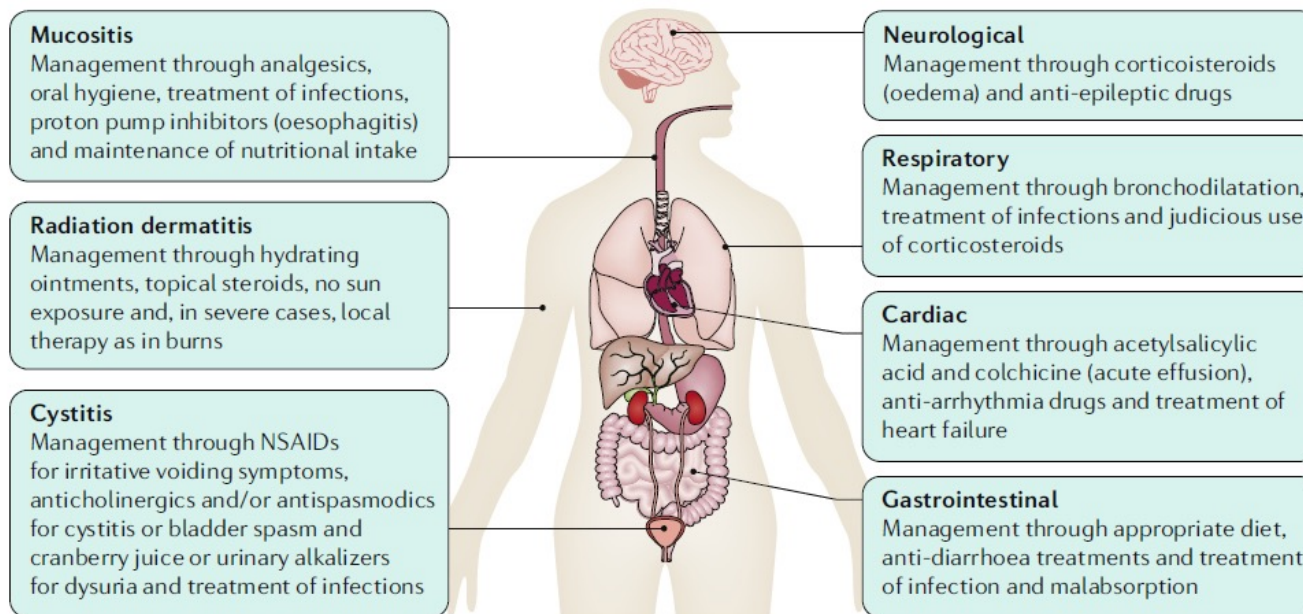


Advantages of modern radiation techniques



Pathophysiology of RT effects on normal tissue

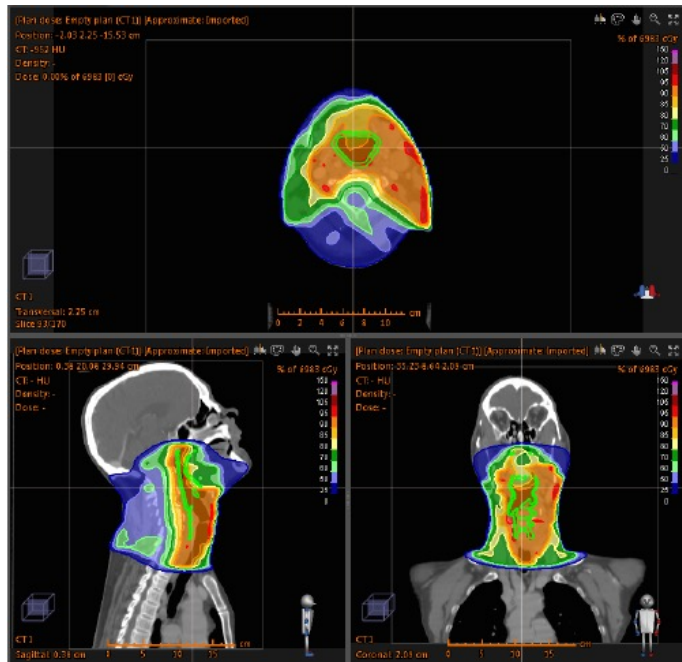




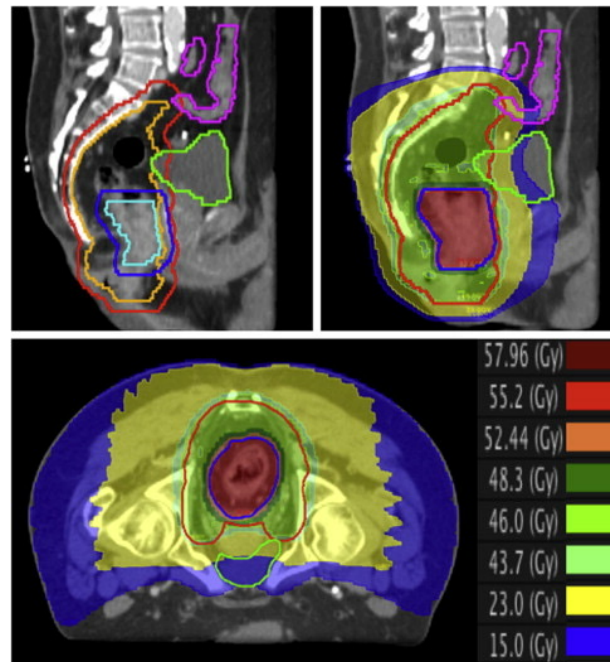
General overview of RT acute toxicities

Nutritional therapy: Main focus for a Radiation Oncologist

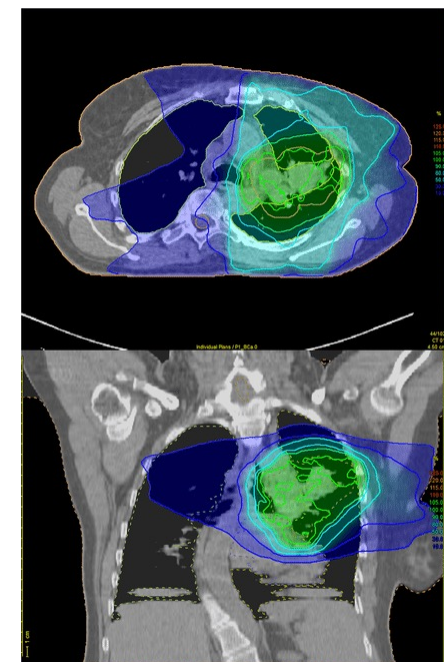
Head and Neck malignancies



Gastrointestinal malignancies



Thorax malignancies

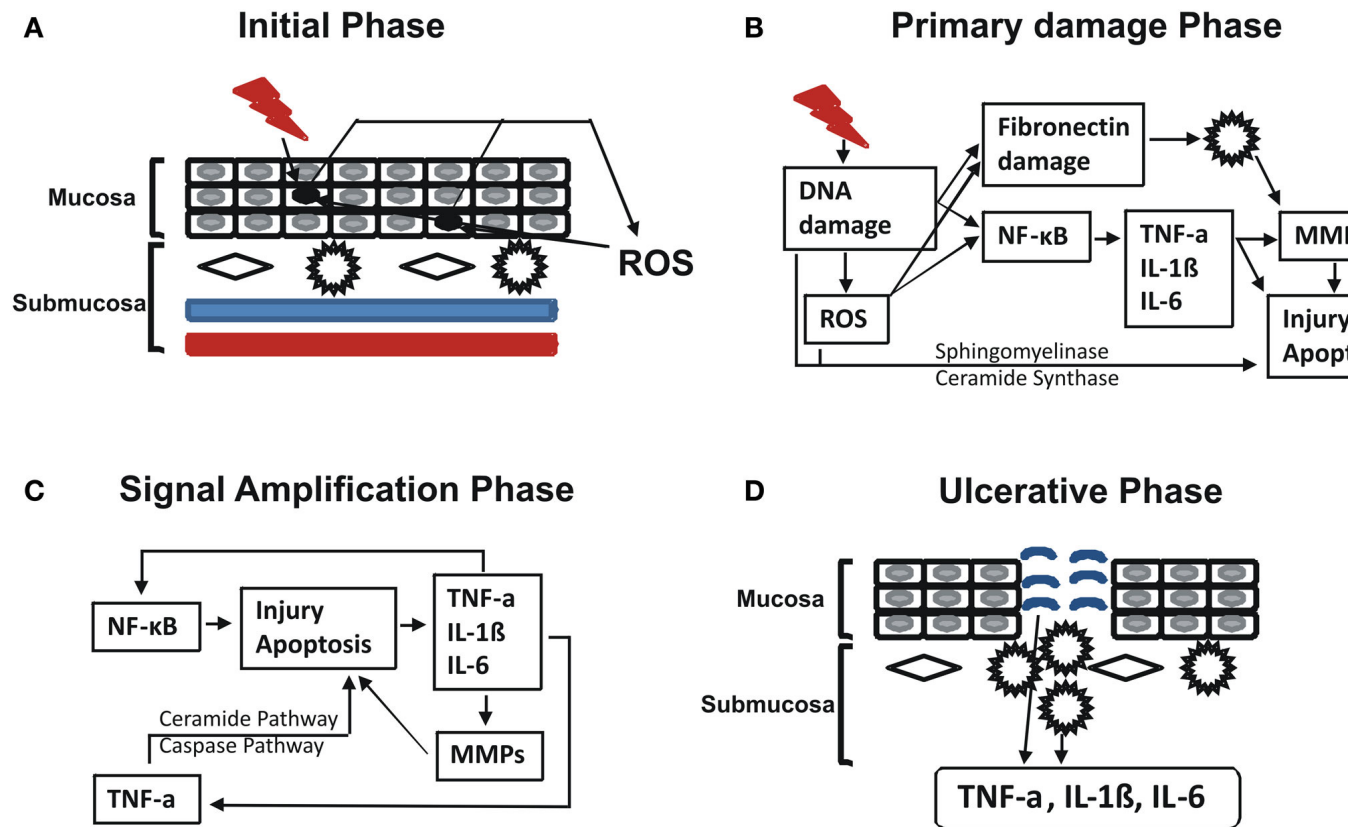


Mucositis

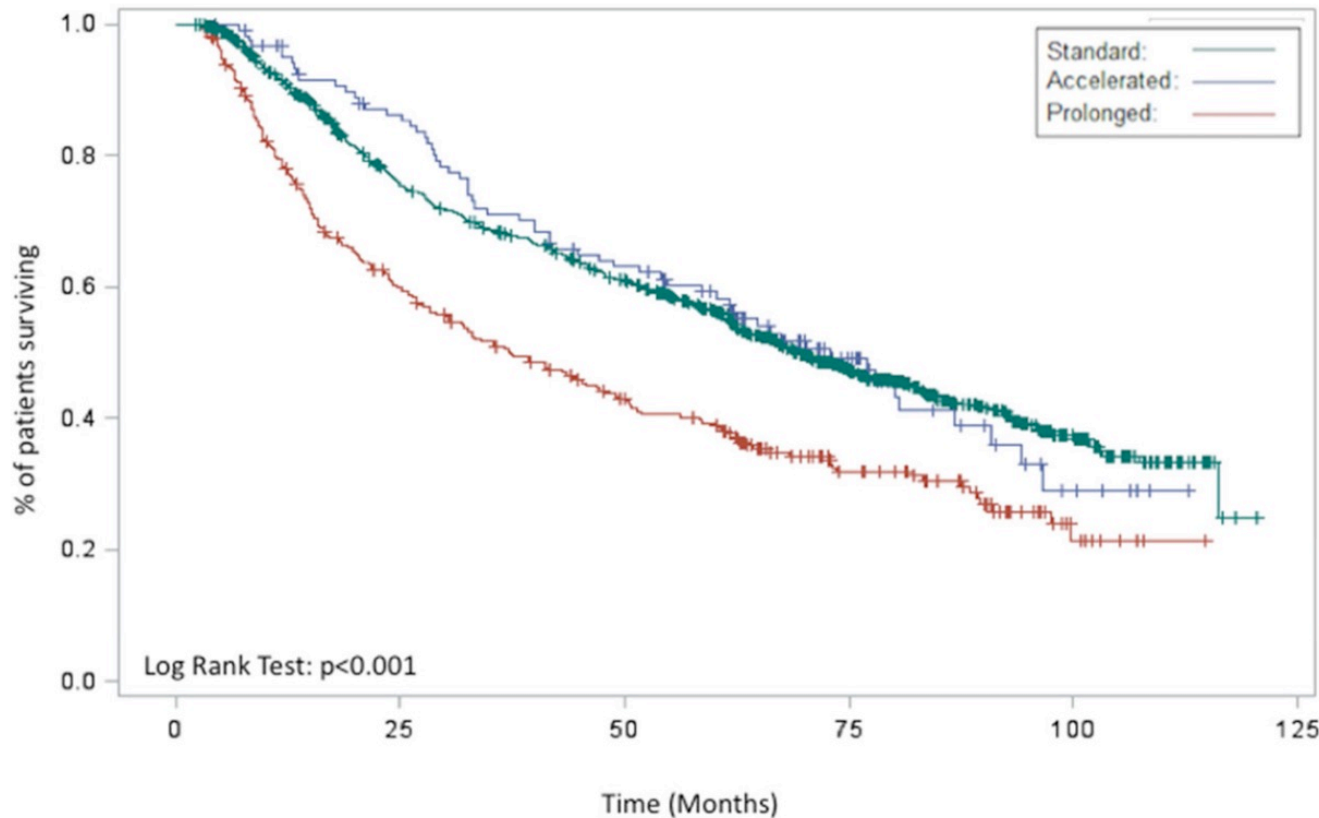
Radiotherapy to the head and neck or esophagus induces mucositis, decreased food intake, and weight loss in up to 80% of patients

Similarly, radiotherapy of the pelvic region is associated with GI symptoms in up to 80% of patients

Pathobiology phases of RT-induced oral mucositis



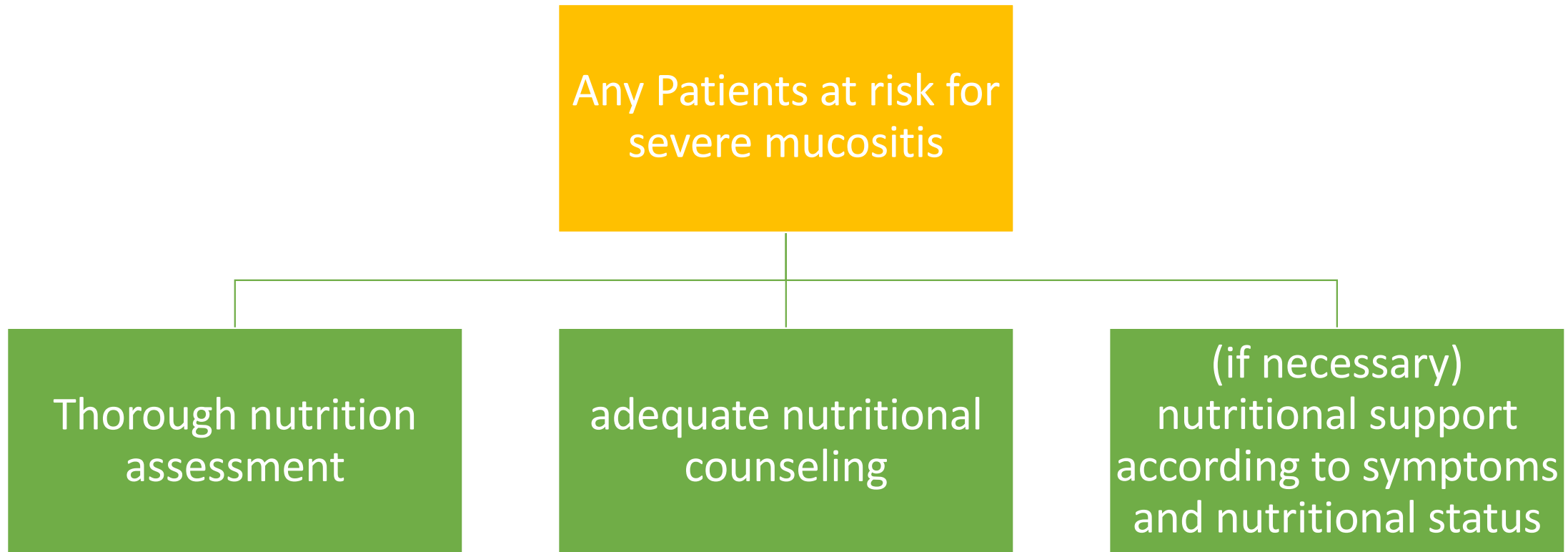
Impact of excessive toxicity on OS in the era of chemoradiotherapy for SCCHN



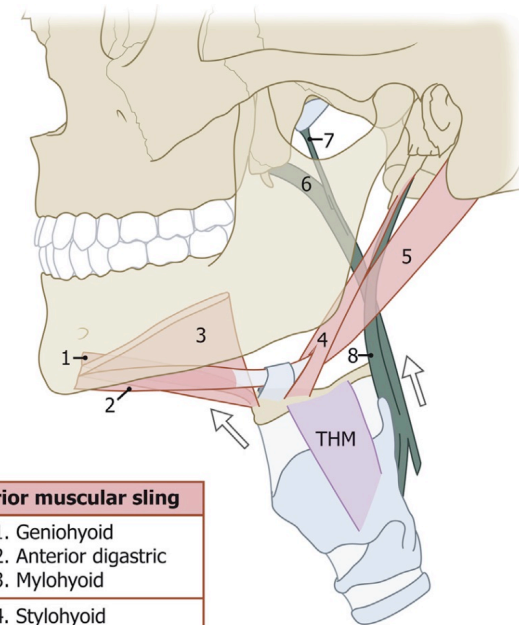
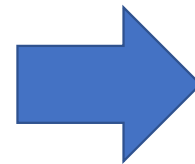
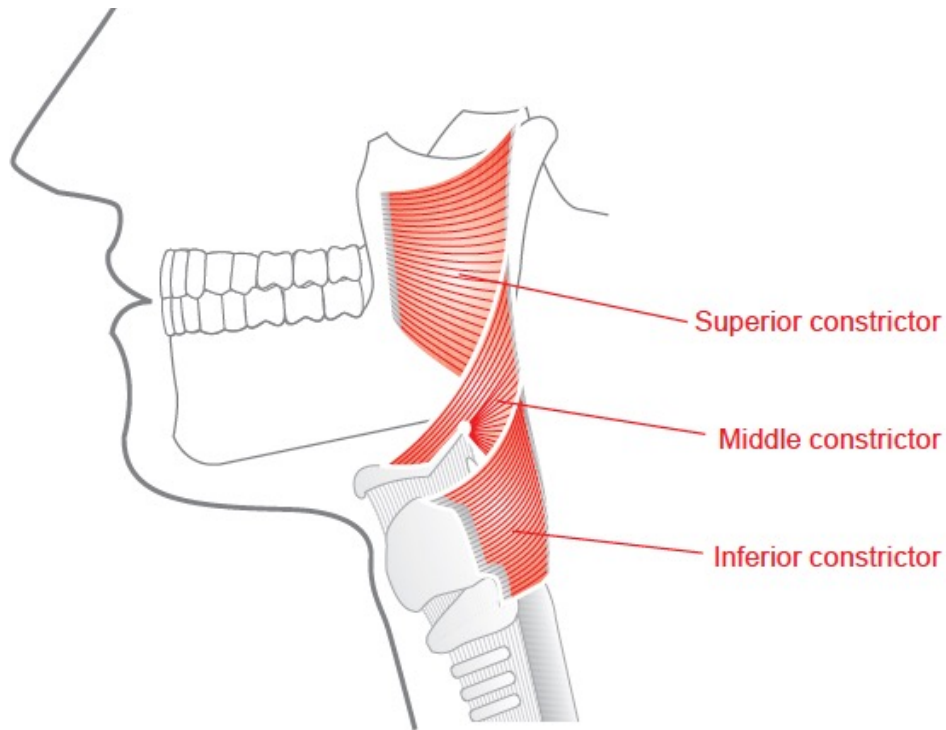
Overall treatment time is a strong prognosticator in patients undergoing curative RT

prolonged OTT (HR 1.29, 95% CI 1.11–1.50) was associated with a worse OS

Proposed interventions for balancing mucositis impact on patients' outcome



Dysphagia: from SWOARs to Functional Units



Anterior muscular sling	
FOM	1. Geniohyoid 2. Anterior digastric 3. Mylohyoid
PDS	4. Stylohyoid 5. Posterior digastric
Posterior muscular sling	
LPM	6. Palatopharyngeus 7. Salpingopharyngeus 8. Stylopharyngeus

Shaikh et al. IJROBP 2016

Dysphagia impact on SCCHN patients

A common, multifactorial, and debilitating sequela for patients who undergo definitive (chemo)radiotherapy for head and neck cancer

Involves a mixture of both acute and late toxicity mechanism

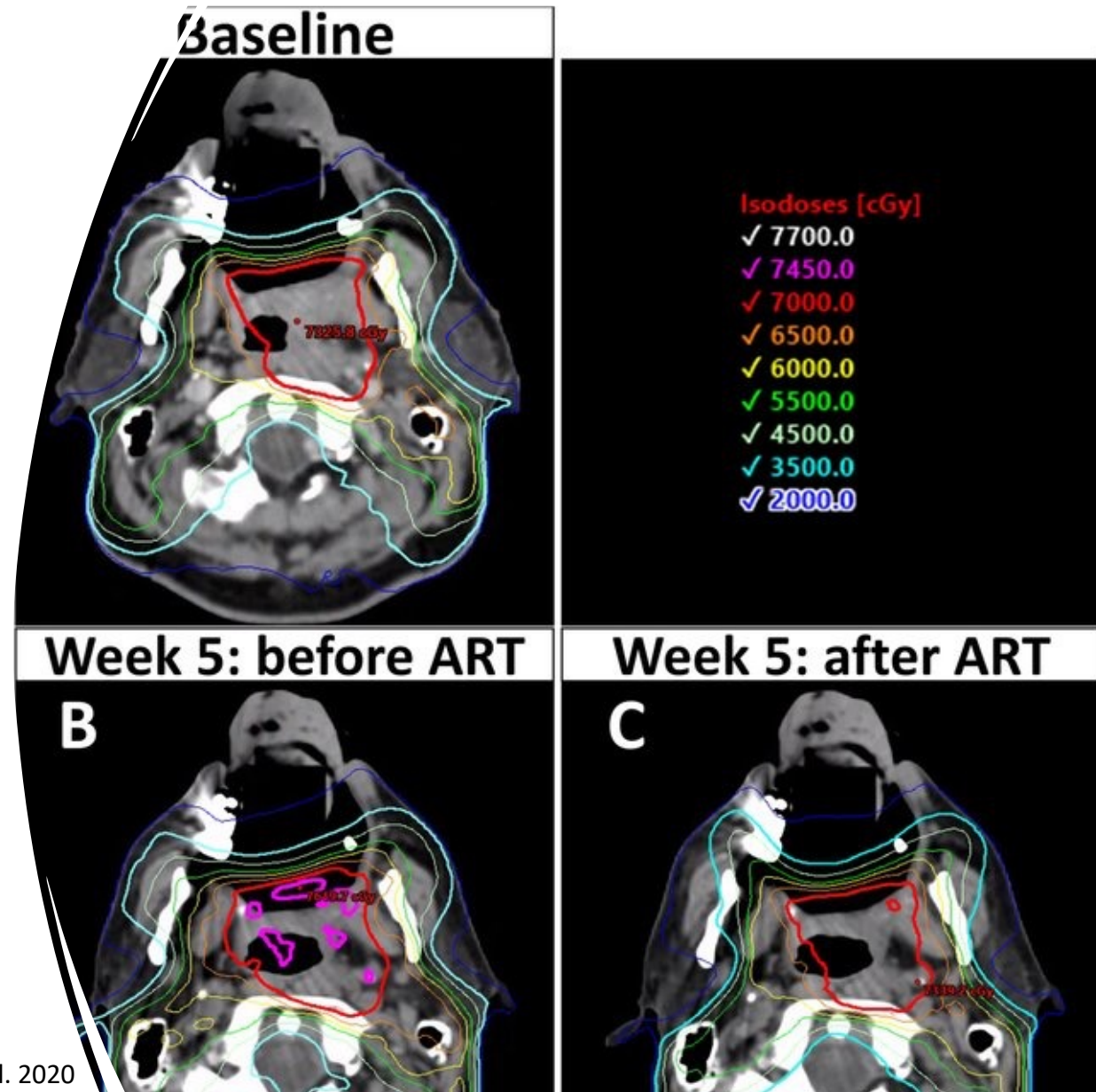
Contribute to **significant survivorship burden** for SCCHN patients

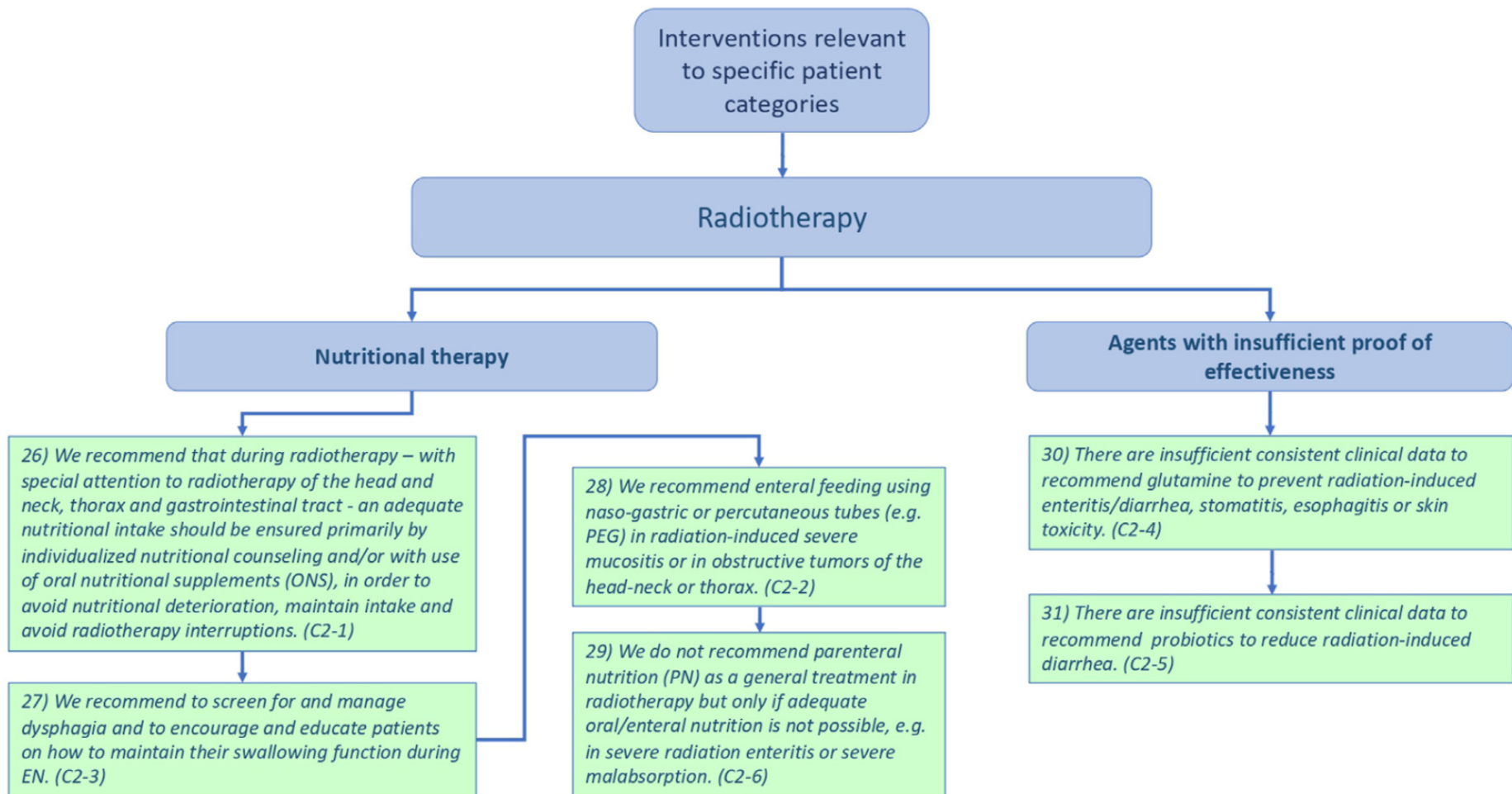
Also detrimental impacts on the psychosocial aspects of and participation in everyday life and ultimately reduced quality of life

Potential
pitfalls in
managing
weight loss in
the IMRT era

**ADAPTIVE
RADIOTHERAPY**

Morgan et al. 2020



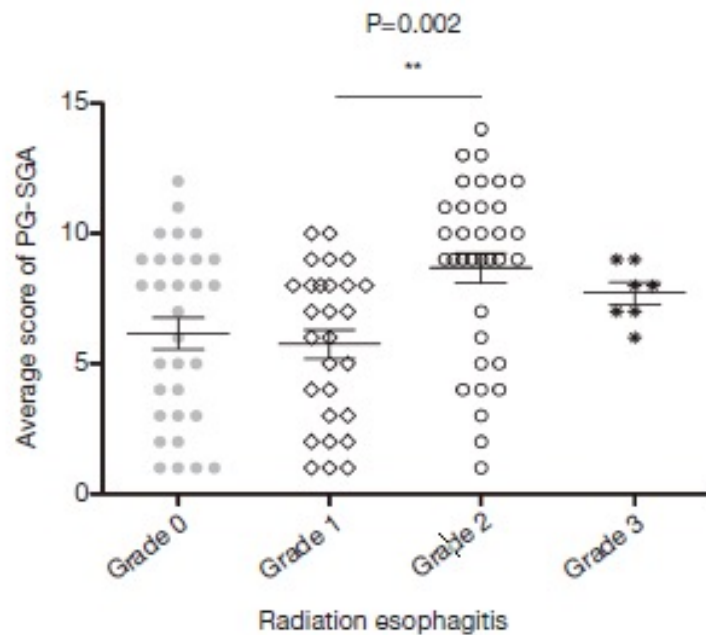


Immunonutrition in HN patients

	Selection bias – random sequence generation	Selection bias – allocation concealment	Reporting bias – selective reporting	Other bias – other sources of bias	Performance bias – blinding (participant and personnel)	Detection bias – blinding (outcome assessment)	Attrition bias – incomplete outcome data	Overall risk of-bias judgement
Boisselier 2020	low	low	low	low	low	low	low	Low risk
Chao 2020	Non-RCT - retrospective study							
Chitapanarux 2019	low	low	low	low	high	unclear	low	Some concerns
Harada 2019	unclear	unclear	low	low	high	unclear	low	High risk
Chitapanarux 2016	low	low	low	low	high	unclear	low	Some concerns
Yuce Sari 2016	Non-RCT – comparative cohort study							
Vasson 2014	low	low	low	low	low	low	high	Low risk
Roca-Rodriguez 2014	unclear	unclear	low	low	high	unclear	low	High risk
Fietkau 2013	low	low	low	low	low	low	high	Some concerns
Yeh 2013	low	low	low	low	high	low	low	Low risk
Huang 2019	low	low	low	low	low	low	high	Low risk
Pathak 2019	low	low	low	low	high	unclear	low	Some concerns
Akmansu 2018	Non-RCT - retrospective study							
Pachon Ibanez 2018	Non-RCT – comparative cohort study							
Lopez-Vaquero 2017	low	low	low	low	low	low	low	Low risk
Pattanayak 2016	low	low	low	low	unclear	low	low	Low risk
Tsujimoto 2015	low	low	low	low	low	low	high	Low risk
Imai 2014	unclear	unclear	low	low	low	low	high	High risk
Chattopadhyay 2014	unclear	unclear	low	low	high	low	low	High risk

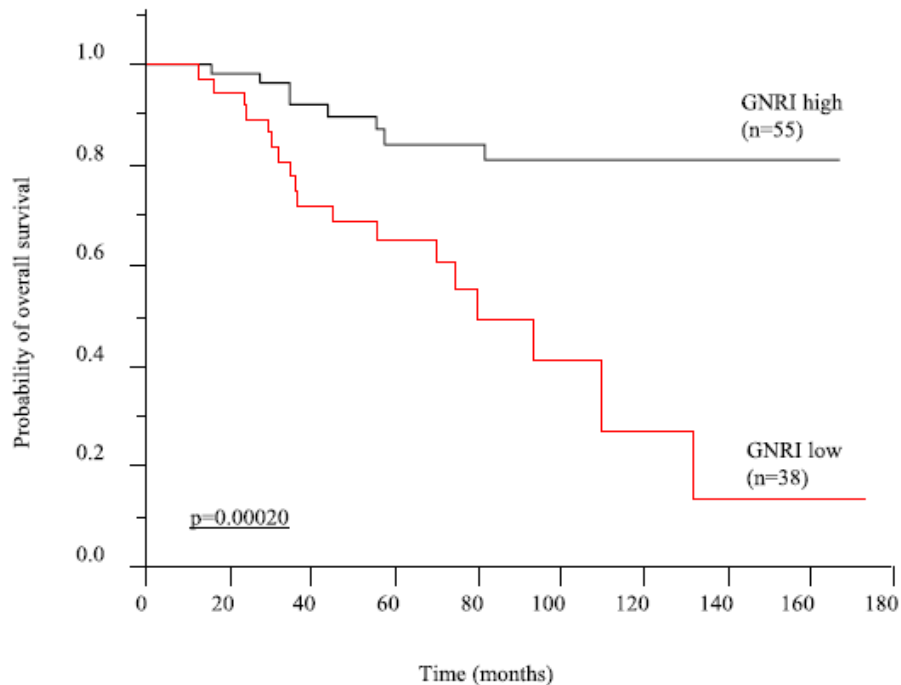
- Systematic review
- 20 studies; 15 RCT
- 1535 patients
- Reasonable QoE
- Favourable impact on OS with immunonutrition

Nutritional status as a predictor of RT toxicity



- 100 pts w/ esophageal cancer
- Nutritional status assessed pre-RT:
 - PG-SGA
 - WL
 - ALB
 - Hb
- Baseline nutritional status associated with development of grade ≥ 2 radiation esophagitis

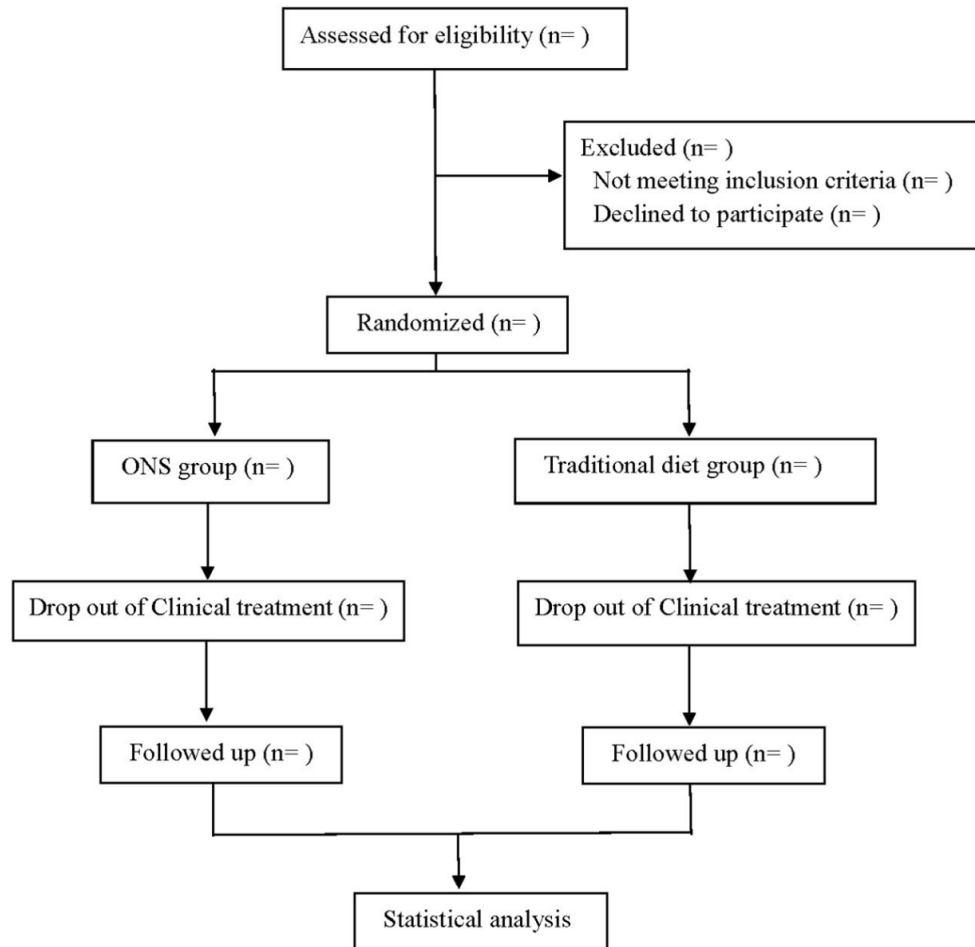
Influence of nutritional status in locally advanced rectal cancer patients



- Neoadjuvant RTCT is a mainstay in LARC patients
- 93 LARC older patients assessed
- Geriatric nutritional index (GNI): $1.489 \times \text{albumin (g/l)} + 41.7 \times \text{current weight/ideal weight}$
- GNI was a good independent prognosticator in this cohort of patients

The quest for obtaining high-level evidence

- Study protocol
- ONS vs Traditional diet
- 25 patients per
- RCT assessing the benefit on ONS in esophageal cancer patients undergoing CRT



Conclusions

Nutrition intervention and management should begin before treatment, especially for patients with high risk factors

Nutritional status should be improved before anti-tumor treatment, especially in the cohort of patients pre-identified at high risk of malnutrition

A multidisciplinary approach, more than ever within this context, is of paramount importance to correctly manage the therapeutic process of these patients undergoing complex treatments involving radiotherapy, systemic therapy and surgery.



Collaborative Group NutriOnc Research Group

→ *perchè insieme è meglio*





Partecipanti alla Survey

Dato complessivo

