Fraccionamiento en tumores de cabeza y cuello

5ta. Jornada Académica de Integración en Radio-Oncología

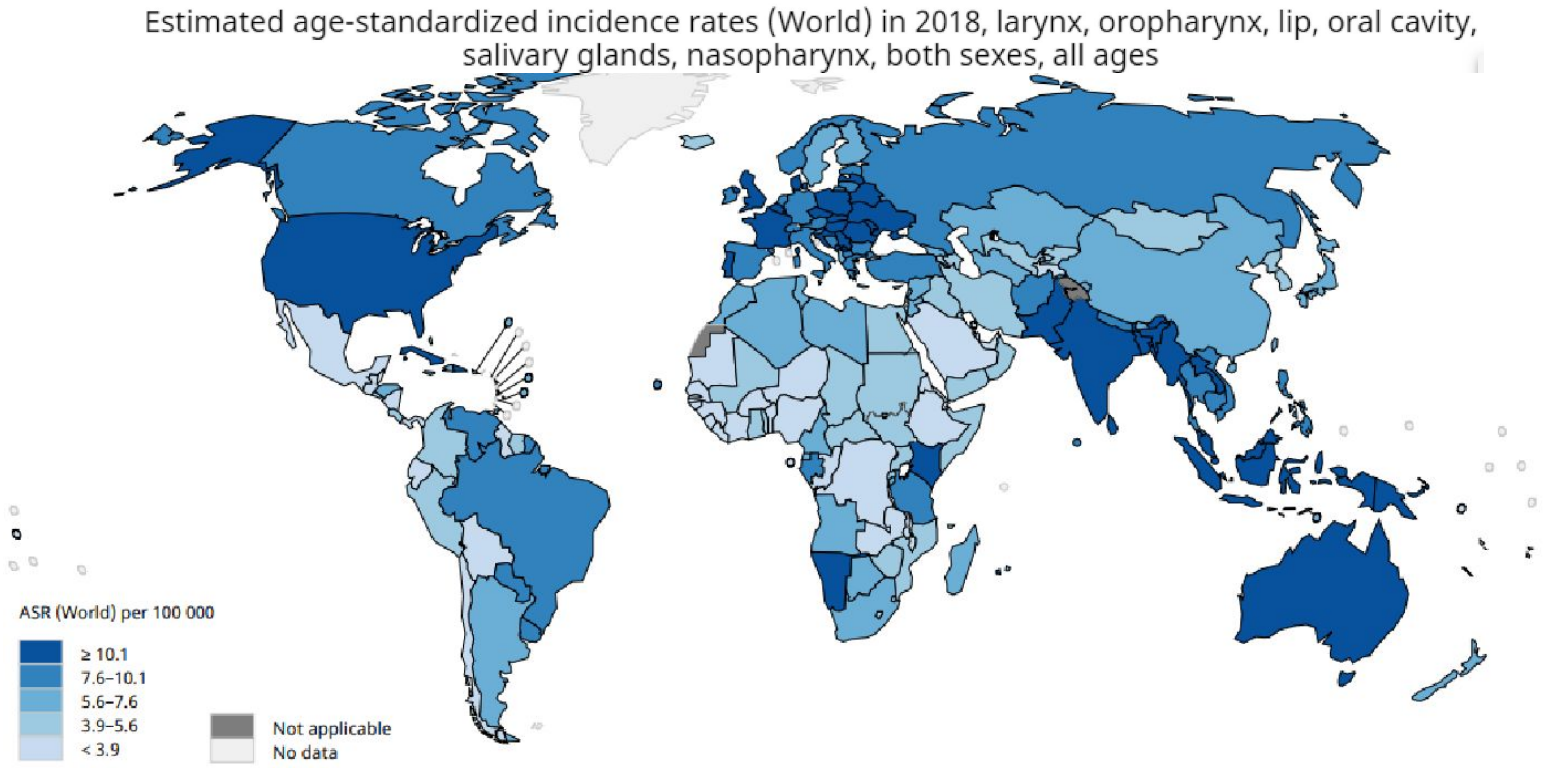
Homenaje a "Prof. Agdo. Dr. Álvaro Luongo Gardi"

Dr. Federico Lorenzo

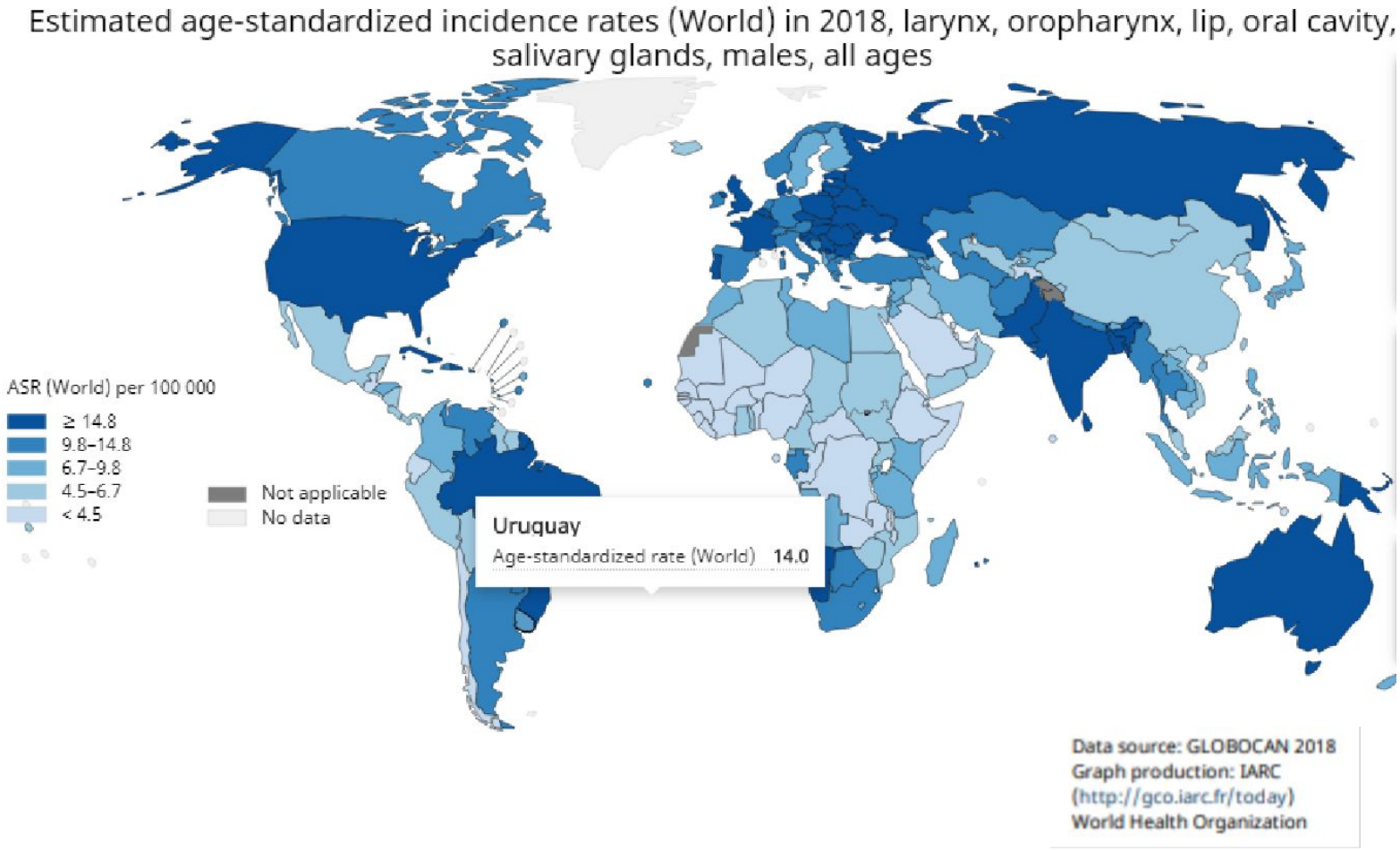
Temario

- Epidemiologia
- Historia
- Radiobiología
- Definiciones
- Evolución de los fraccionamientos en tumores de cabeza y cuello
- RT paliativa

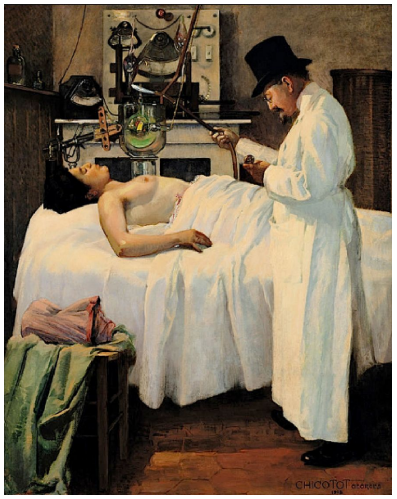
Incidencia


Estimated age-standardized incidence rates (World) in 2018, larynx, oropharynx, lip, oral cavity, salivary glands, nasopharynx, both sexes, all ages
ASR (World) per 100 000
≥ 10.1
7.6–10.1
5.6–7.6
3.9–5.6
< 3.9
Not applicable
No data
Data source: GLOBOCAN 2018
Graph production: IARC
(http://gco.iarc.fr/today)
World Health Organization

Incidencia en hombres



Historia



- 1896 Roentgen descubre los Rayos X
- 1898 Curie descubre el radio
- El primer informe de un tratamiento curativo a través de radioterapia data de 1899
- El primer tratamiento de BT se realizo en 1901
- Se empleaban fracciones únicas y se modificaba la variable tiempo

1 ERA PUBLICACIÓN DE FX.

- 1932 Henry Coutard publica los excelentes resultados obtenidos con RT fraccionada.

- Debieron pasar varias décadas para entender los principios radiobiológicos que explicaban dicho control.

ROENTGENOTHERAPY OF MALIGNANT NEOPLASMS OF THE PHARYNX AND LARYNX

MAURICE LENZ, M.D.

NEW YORK

With the installation of a 30 milliampere water-cooled x-ray tube at the Montefiore Hospital and an 8 milliampere air-cooled x-ray tube at the Presbyterian Hospital, we have had the opportunity to try out the more rapid administration of this treatment in about thirty-three cases of malignant neoplasms of the pharynx, larynx, tonsils and adjacent mucous membranes of the jaws, base of the tongue and soft palate. On account of the greater milliamperage, we were able to reduce the total exposure time from Coutard's twenty-five to thirty-five hours to from two and a half to eight and a half hours, and the daily exposure time from Coutard's one to four hours, to from fifteen to twenty-two minutes. The factors used were 200 kilovolts, 50 cm. skin target distance, and fields varying from 7 by 7 cm., e. g., in cases limited to the larynx, to 10 by 20 cm. for more extensive lesions. The filter used at Montefiore Hospital was 0.5 mm. silver plus 1 mm. aluminum, and at Presbyterian Hospital, 1.86 mm. copper plus 1 mm. aluminum. Most of the patients were treated in from twenty to thirty days. One field was treated daily with doses that varied between 300 and 450 roentgens as measured in air. A total dose of from 5,000 to 9,000 roentgens in air, distributed over two or more opposing fields on each side of the neck, was given within this period. About three fifths of this dose was usually given to the side of the lesion and two-fifths cross-firing from the opposite side of the neck. In lesions limited to the larynx where the distance intervening between the fields is smaller, equal amounts were given on each side.

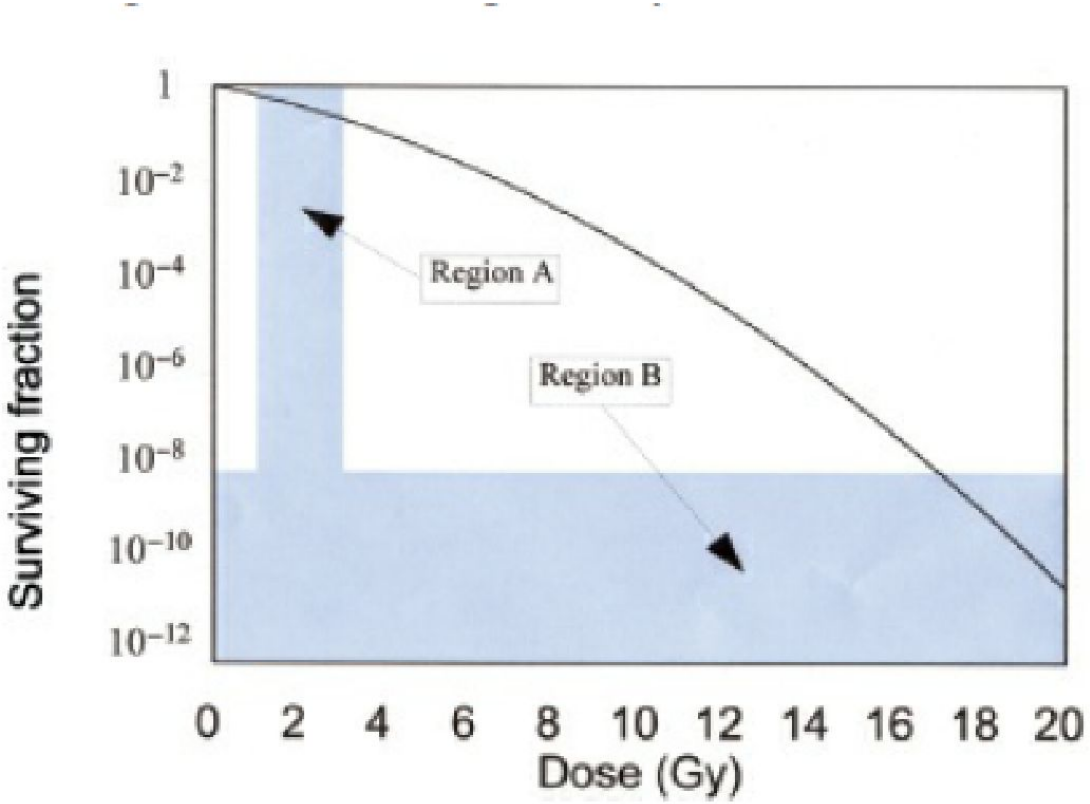
$$1R = 2,58 \cdot 10^{-4} C/kg$$

JOUR. A. M. A.
NOV. 26, 1932

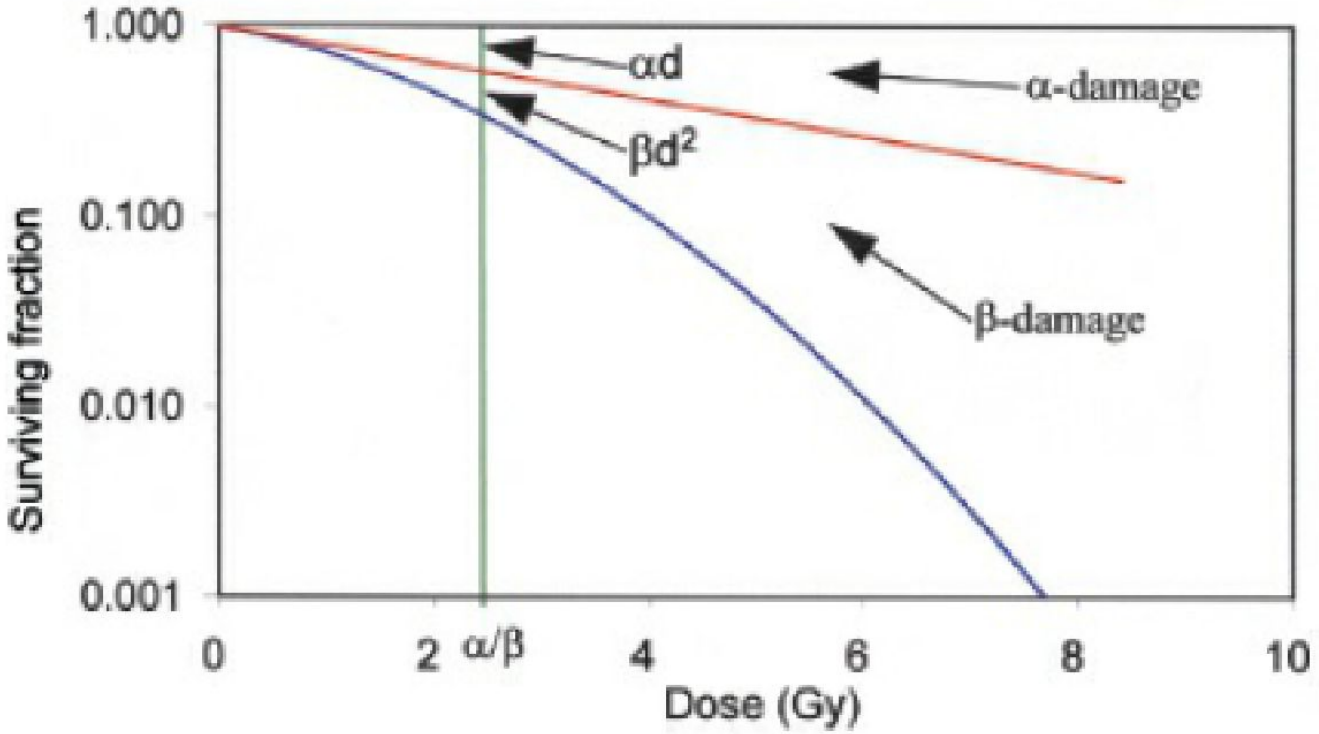
Las 5 R de la radiobiología

- Reparación
- Redistribución
- Re oxigenación
- Repoblación
- Radiosensibilidad

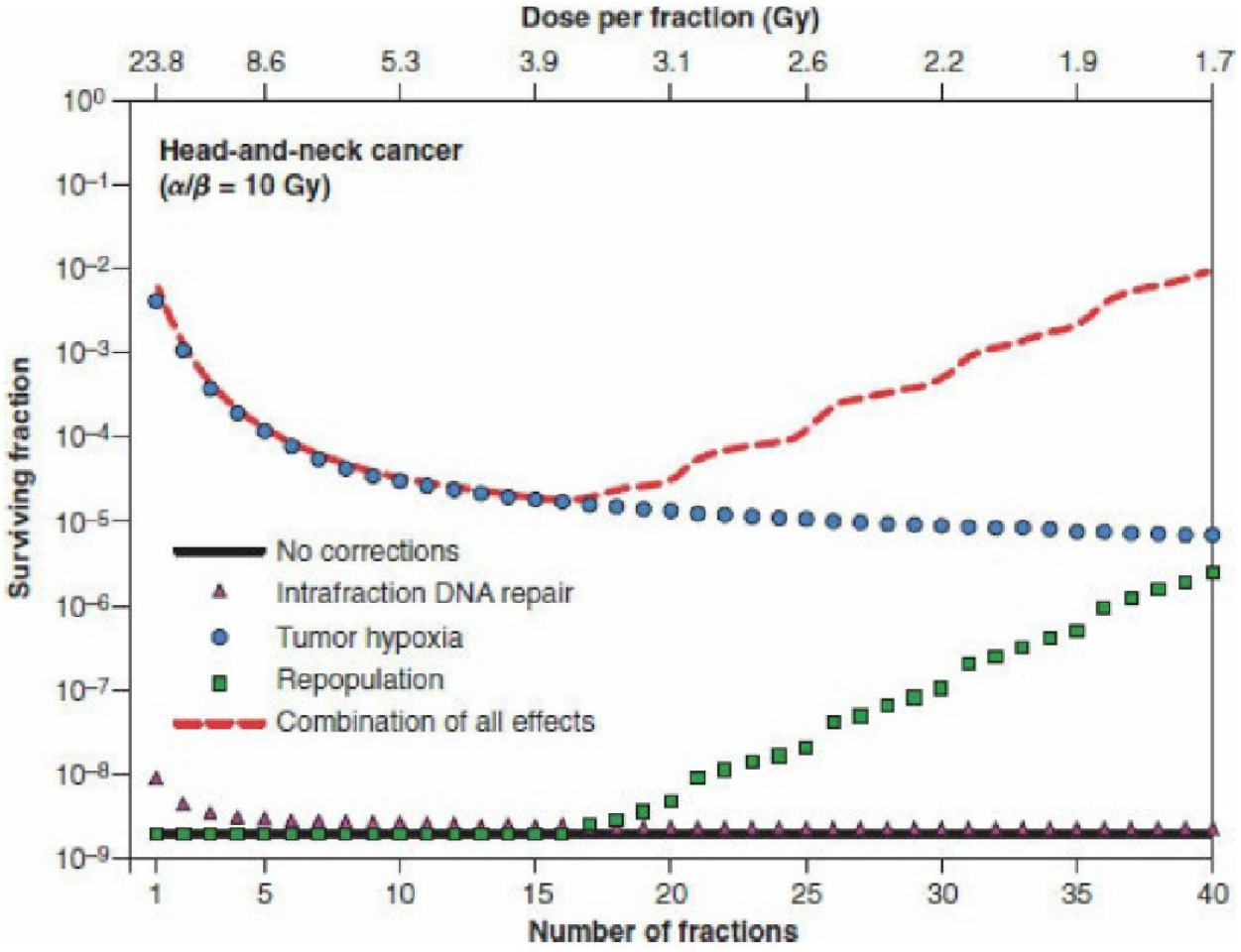
Curva de sobrevida celular



Alfa / beta


1.000
0.100
0.010
0.001
Surviving fraction
αd
βd²
α-damage
β-damage
0
2
α/β
4
6
8
10
Dose (Gy)

Repoblación y reoxigenación



Definiciones

- Fraccionamiento estándar: una única fracción/ día 180-200 cGy 5 fx por semana.
- Hiperfraccionamiento: Dos fracciones al día, 115-120 cGy separadas al menos por 6 hs. Aumentando la dosis total sin disminuir el tiempo total de tto.
- Fraccionamiento acelerado: 2 o 3 fracciones diarias de 150-200 cGy acortando el tiempo de tratamiento
- Hipofraccionamiento: una fracción diaria de250-500 cGy, disminuyendo el tiempo total de tratamiento.

CHART 1997

ELSEVIER

Radiotherapy and Oncology 44 (1997) 123–136

RADIOTHERAPY & ONCOLOGY

A randomised multicentre trial of CHART versus conventional radiotherapy in head and neck cancer[1]

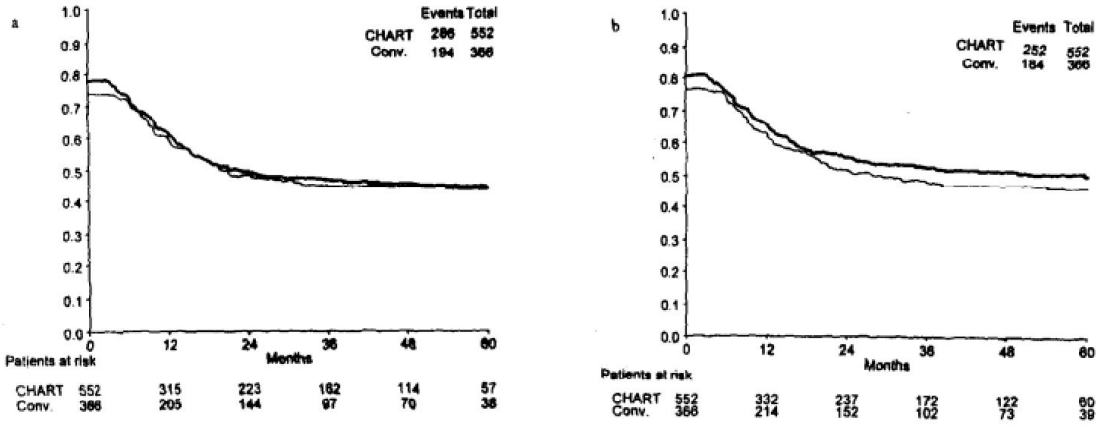
Stanley Dische[a], Michele Saunders[a,*], Ann Barrett[b], Angela Harvey[c], Della Gibson[c], Mahesh Parmar[c,2]

[a]*Marie Curie Research Wing, Mount Vernon Hospital, Rickmansworth Road, Northwood, Middlesex, HA6 2RN, UK*
[b]*Beatson Oncology Centre, Western Infirmary, Glasgow, UK*
[c]*Medical Research Council Cancer Trials Office, Cambridge, UK*

Received 21 May 1997; revised version received 10 June 1997; accepted 14 June 1997

CHART

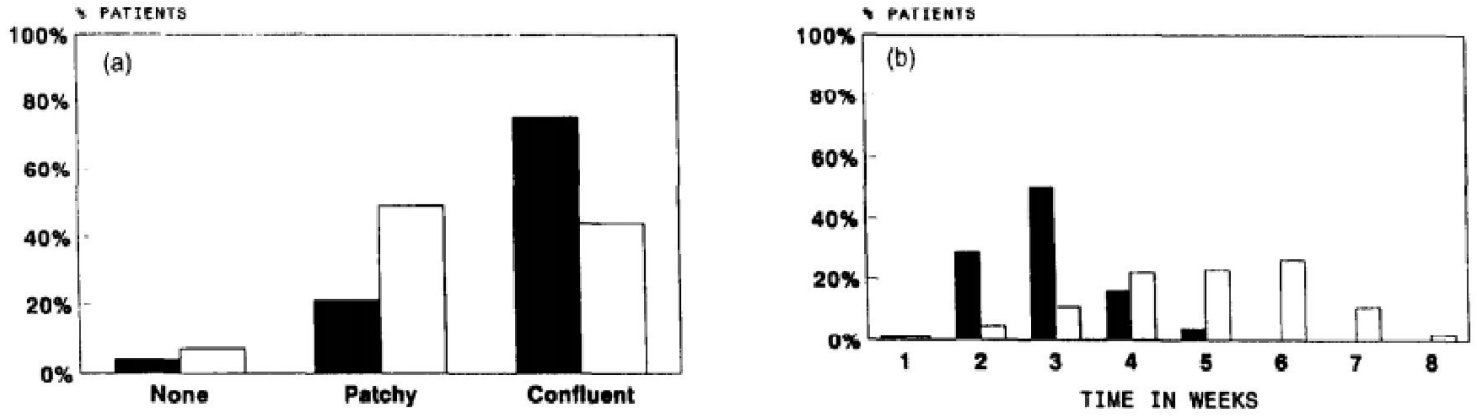
- Ensayo randomizado multicentrico 918 pacientes
- Rama estudio 54 Gy en 12 días (3 fx de 1.5 Gy por día)
- E III-IVB



Radiotherapy and Oncology 44 (1997) 123–136

CHART

(a) The maximum mucositis; (b) the time to maximum mucositis;



Radiotherapy and Oncology 44 (1997) 123–136

RTOG 9003

- 70 Gy en 35 fx de 2 Gy 1 vez por día (7 semanas)
- 81.6 Gy en 68 fx 1.2 2 veces por día (7 semanas)
- 67.2 Gy en 44 fx 1.6 Gy 2 veces por día en 6 semanas con un break de 2 semanas a los 38.4 Gy.
- 72 Gy en 6 semanas fx 1.8 Gy, y en los últimos 12 días tto boost concomitante de 1.5 Gy

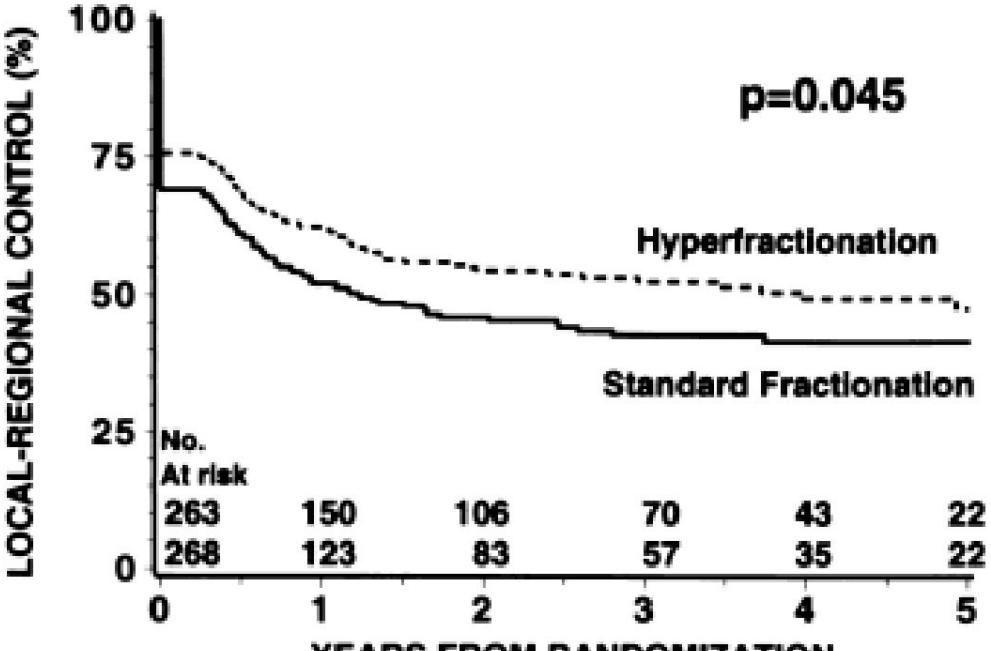
Hiperfracionamiento RTOG 9003

International Journal of Radiation Oncology biology • physics
www.redjournal.org

Clinical Investigation: Head and Neck Cancer

Final Results of Local–Regional Control and Late Toxicity of RTOG 9003: A Randomized Trial of Altered Fractionation Radiation for Locally Advanced Head and Neck Cancer

Jonathan J. Beitler, MD, MBA,* Qiang Zhang, PhD,† Karen K. Fu, MD,‡ Andy Trotti, MD,§ Sharon A. Spencer, MD,‖ Christopher U. Jones, MD,¶ Adam S. Garden, MD,# George Shenouda, MD,** Jonathan Harris, MS,† and Kian K. Ang, MD, PhD (deceased)#



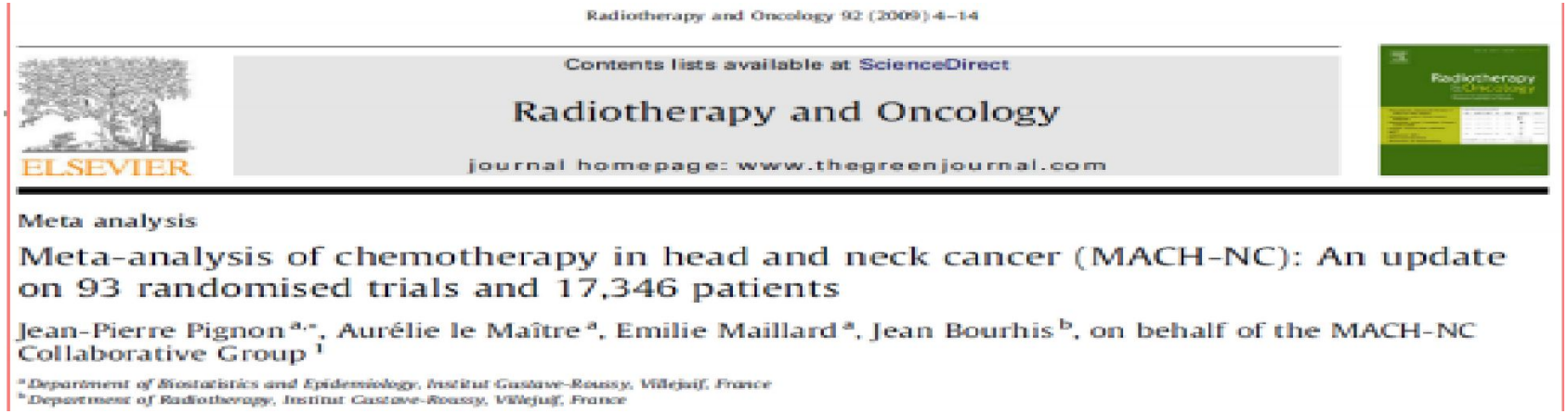
Int J Radiat Oncol Biol Phys. 2014 May 1;89(1):13-20.

Efectos adversos

Table 4 Worst grade late toxicity per patient

Grade	SFX (n=234)	HFX (n=232)	AFX-S (n=239)	AFX-C (n=232)
1	33 (14.1%)	20 (8.6%)	34 (14.2%)	20 (8.6%)
2	97 (41.5%)	117 (50.4%)	102 (42.7%)	95 (40.9%)
3	44 (18.8%)	40 (17.2%)	45 (18.8%)	61 (26.3%)
4	22 (9.4%)	24 (10.3%)	22 (9.2%)	23 (9.9%)
5	2 (0.9%)	1 (0.4%)	2 (0.8%)	1 (0.4%)
Grade 3-5 vs 0-2 (experimental vs control)				
P value (2-sided Fisher exact test)	.84		1.00	.09

Abbreviations: AFX-C = accelerated fractionation, continuous; AFX-S = accelerated fractionation with split; HFX = hyperfractionation; SFX = standard fractionation.



Radiotherapy and Oncology 92 (2009) 4–14

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

Meta analysis

Meta-analysis of chemotherapy in head and neck cancer (MACH-NC): An update on 93 randomised trials and 17,346 patients

Jean-Pierre Pignon [a,*], Aurélie le Maître [a], Emilie Maillard [a], Jean Bourhis [b], on behalf of the MACH-NC Collaborative Group [1]

[a] Department of Biostatistics and Epidemiology, Institut Gustave-Roussy, Villejuif, France
[b] Department of Radiotherapy, Institut Gustave-Roussy, Villejuif, France

- Nivel de evidencia I
- El mayor beneficio se observa en la concomitancia, siendo el valor absoluto 6.5 % a 5 años HR = 0.81 ($p < 0,0001$)
- Siendo el mayor beneficio locorregional e inversamente proporcional a la edad del paciente

Radiotherapy and Oncology 100 (2011) 33–40

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

Meta-analysis of radiotherapy in HNSCC

Meta-analysis of chemotherapy in head and neck cancer (MACH-NC): A comprehensive analysis by tumour site

Pierre Blanchard [a,b,1], Bertrand Baujat [c,1], Victoria Holostenco [a], Abderrahmane Bourredjem [a], Charlotte Baey [a], Jean Bourhis [b], Jean-Pierre Pignon [b,*], on behalf of the MACH-CH Collaborative group [2]

[a] Biostatistics and Epidemiology Department; and [b] Radiotherapy Department, Institut Gustave Roussy, Villejuif, France; [c] Head and Neck Surgery, Hôpital Foch, Suresnes, France

Table 4: Risk reduction of death after concurrent chemotherapy and radiotherapy compared to no chemotherapy[315]

Subsite	Percentage reduction in risk of death
oropharynx	23%
larynx	22%
oral cavity	17%
hypopharynx	16%

Table 5: Risk reduction of death after concurrent chemotherapy by age[314,315]

Age	Percentage reduction in risk of death
60 or less	22-24%
60-70	12%
over 70	3%

DAHANCA

Five versus six fractions of radiotherapy per week for squamous-cell carcinoma of the head and neck (IAEA-ACC study): a randomised, multicentre trial

Jens Overgaard, Bidhu Kaylan Mohanti, Naseem Begum, Rubina Ali, Jai Prakash Agarwal, Maire Kuddu, Suman Bhasker, Hideo Tatsuzaki, Cai Grau

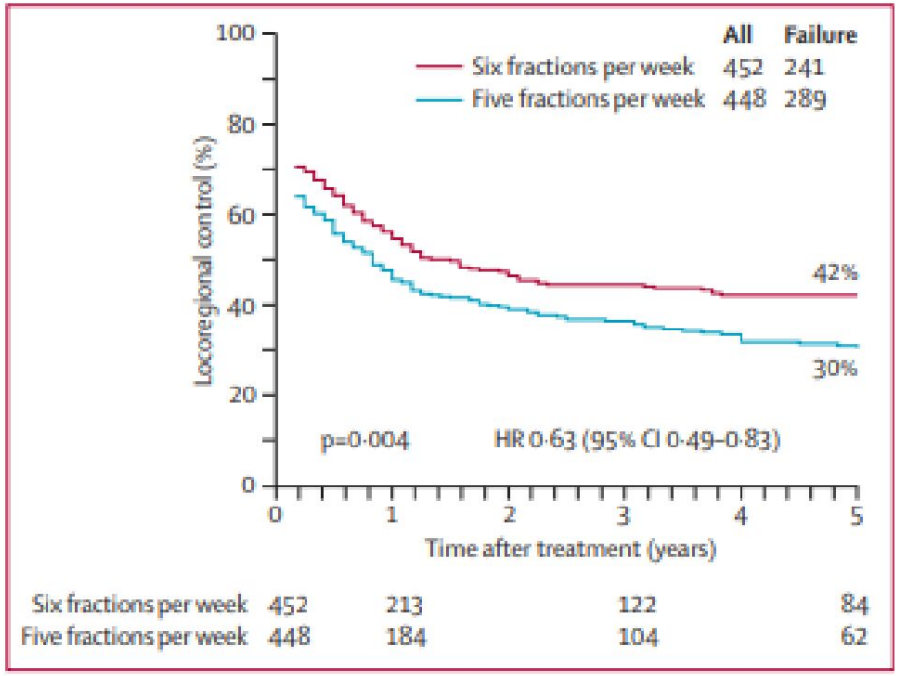


Figure 2: Locoregional tumour control

Lancet Oncol. 2010 Jun;11(6):553-60.

Role of radiotherapy fractionation in head and neck cancers (MARCH): an updated meta-analysis

Benjamin Lacas, Jean Bourhis, Jens Overgaard, Qiang Zhang, Vincent Grégoire, Matthew Nankivell, Björn Zackrisson, Zbigniew Szutkowski, Rafał Suwiński, Michael Poulsen, Brian O'Sullivan, Renzo Corvò, Sarbani Ghosh Laskar, Carlo Fallai, Hideya Yamazaki, Werner Dobrowsky, Kwan Ho Cho, Adam S Garden, Johannes A Langendijk, Celia Maria Pais Viegas, John Hay, Mohamed Lotayef, Mahesh K B Parmar, Anne Aupérin, Carla van Herpen, Philippe Maingon, Andy M Trotti, Cai Grau, Jean-Pierre Pignon, Pierre Blanchard*, on behalf of the MARCH Collaborative Group†*

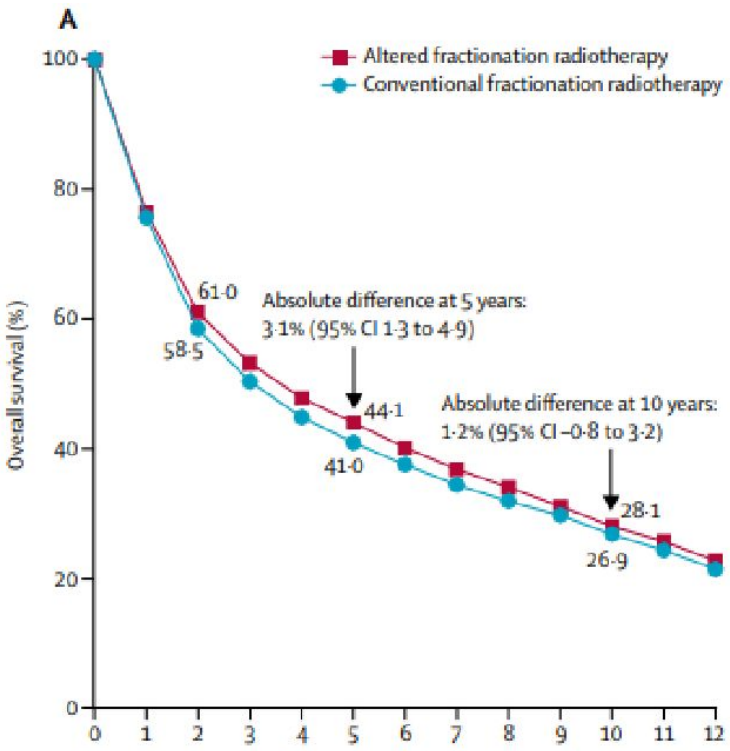
Summary

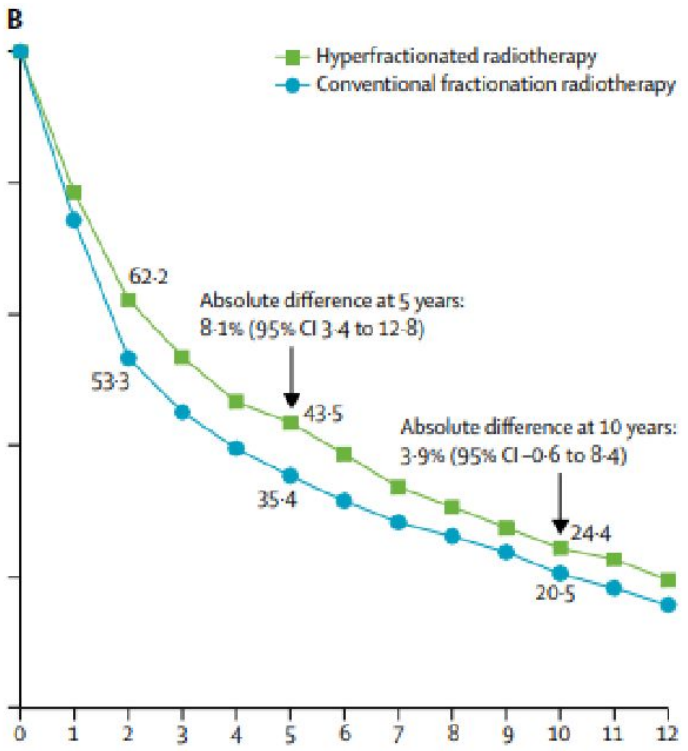
Background The Meta-Analysis of Radiotherapy in squamous cell Carcinomas of Head and neck (MARCH) showed that altered fractionation radiotherapy is associated with improved overall and progression-free survival compared with conventional radiotherapy, with hyperfractionated radiotherapy showing the greatest benefit. This update aims to confirm and explain the superiority of hyperfractionated radiotherapy over other altered fractionation radiotherapy regimens and to assess the benefit of altered fractionation within the context of concomitant chemotherapy with the inclusion of new trials.

- Metaanálisis de 33 ensayos con 11423 pacientes

Lancet Oncol 2017

MARCH





Lancet Oncol 2017

Complicaciones agudas

	Comparisons (n)	Patients (n)	Proportion of patients with toxicity receiving altered fractionation radiotherapy*	Proportion of patients with toxicity receiving conventional radiotherapy, n/N (%)	Odds ratio (95% CI)	p value for safety	I^2	p value for heterogeneity
Acute toxicities								
Mucositis (all trials)	20	8541	38·9%	1155/4233 (27·3%)	2·02 (1·81–2·26)	<0·0001	78%	<0·0001
Mucositis (no heterogeneity)	16	7051	35·2%	845/3499 (24·1%)	2·10 (1·84–2·41)	<0·0001	0%	0·66
Dermatitis (all trials)	15	4997	17·7%	410/2483 (16·5%)	1·09 (0·93–1·29)	0·29	36%	0·083
Dermatitis (no heterogeneity)	13	4314	20·1%	376/2143 (17·5%)	1·20 (1·01–1·42)	0·041	0%	0·83
Weight loss (all trials)	5	2053	3·6%	43/1023 (4·2%)	0·87 (0·56–1·36)	0·54	7%	0·37
Need for feeding tube (all trials)	6	2859	52·1%	563/1420 (39·6%)	1·75 (1·49–2·05)	<0·0001	89%	<0·0001
Need for feeding tube (no heterogeneity)	4	1871	35·6%	252/929 (27·1%)	1·63 (1·34–1·99)	<0·0001	3%	0·38

Lancet Oncol 2017

Complicaciones tardías

Late toxicities	Comparisons (n)	Patients (n)	Proportion of patients with toxicity receiving altered fractionation radiotherapy*	Proportion of patients with toxicity receiving conventional radiotherapy, n/N (%)	Odds ratio (95% CI)	p value for safety	I^2	p value for heterogeneity
Xerostomia (all trials)	12	4726	51·3%	1193/2337 (51·0%)	1·01 (0·88–1·14)	0·94	20%	0·25
Xerostomia (no heterogeneity)	11	4414	54·6%	1181/2182 (54·1%)	1·02 (0·90–1·17)	0·73	0%	0·50
Bone toxicity (all trials)	11	3219	4·4%	64/1585 (4·0%)	1·12 (0·80–1·57)	0·52	0%	0·77
Mucosal toxicity (all trials)	8	2298	14·5%	149/1114 (13·4%)	1·10 (0·87–1·40)	0·41	49%	0·058
Mucosal toxicity (no heterogeneity)	7	1921	14·4%	140/937 (14·9%)	0·96 (0·74–1·24)	0·74	0%	0·64
Neck fibrosis (all trials)	15	5557	7·6%	188/2744 (6·9%)	1·13 (0·92–1·39)	0·23	70%	<0·0001
Neck fibrosis (no heterogeneity)	12	4250	7·0%	138/2109 (6·5%)	1·09 (0·85–1·38)	0·50	0%	0·45

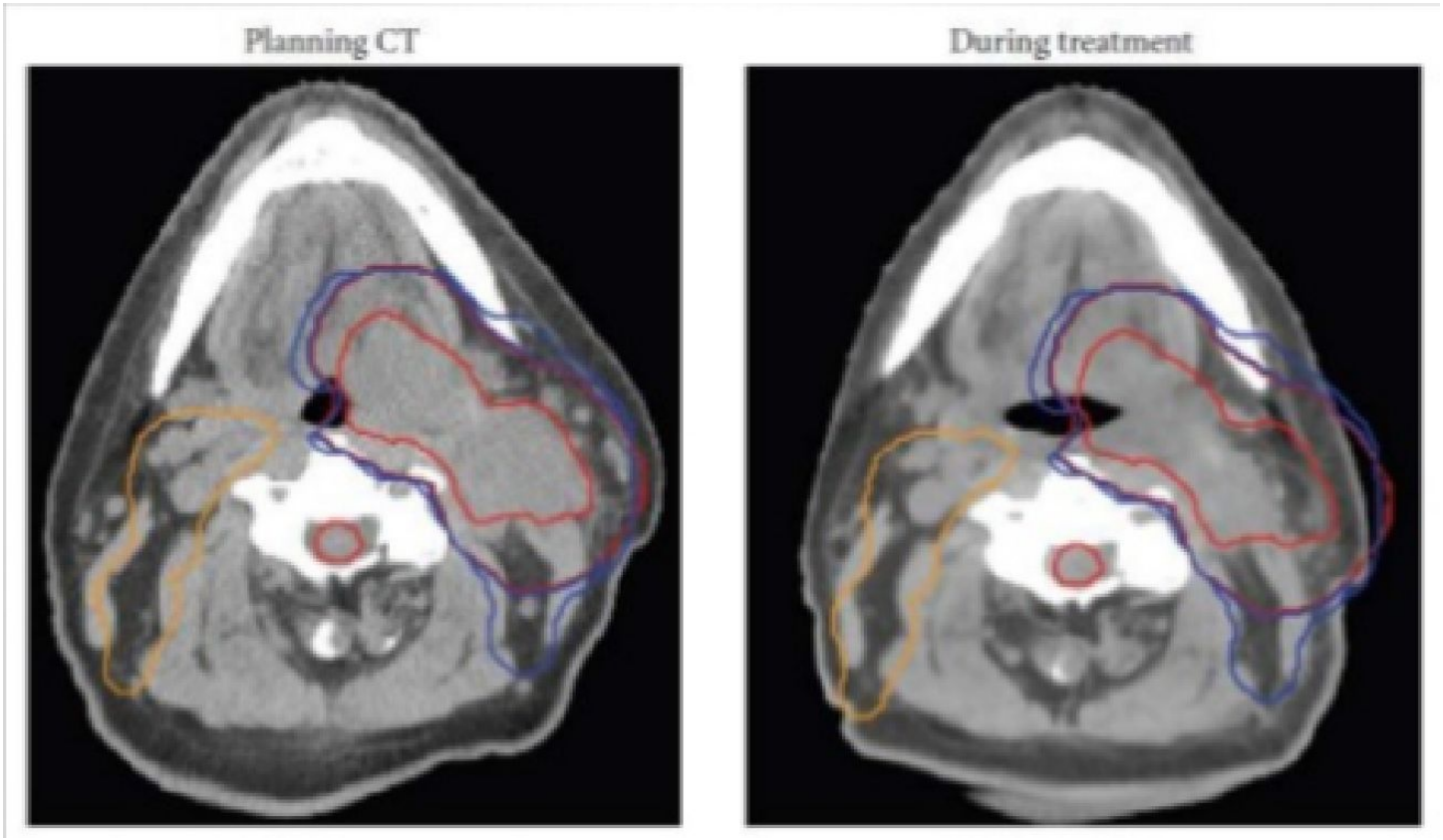
Data include grade 3–4 toxicities (severe toxicities) and grade 2–3 xerostomia. Acute toxicities are toxicities that occurred in the first 6 months after randomisation; they are due to the treatment. Late toxicities are toxicities that occurred later than 6 months after randomisation; they are long-term toxicities. No heterogeneity refers to a

Lancet Oncol 2017

Radioterapia adaptativa

- Definición: Cambios durante el plan de radioterapia adaptando las curvas de isodosis a las modificaciones volumétricas.

Adaptativa Radioterapia (ART)



Caso Clínico

- Paciente sexo masculino 60 años
- Fumador intenso
- Talla 1.90 mts. peso 100 Kg.
- AP IAM KK III, por lo que se descarto CDDP
- Carcinoma epidermoide pobremente diferenciado Orofaringe T4aN3bM0 EIVB.

CASO CLINICO

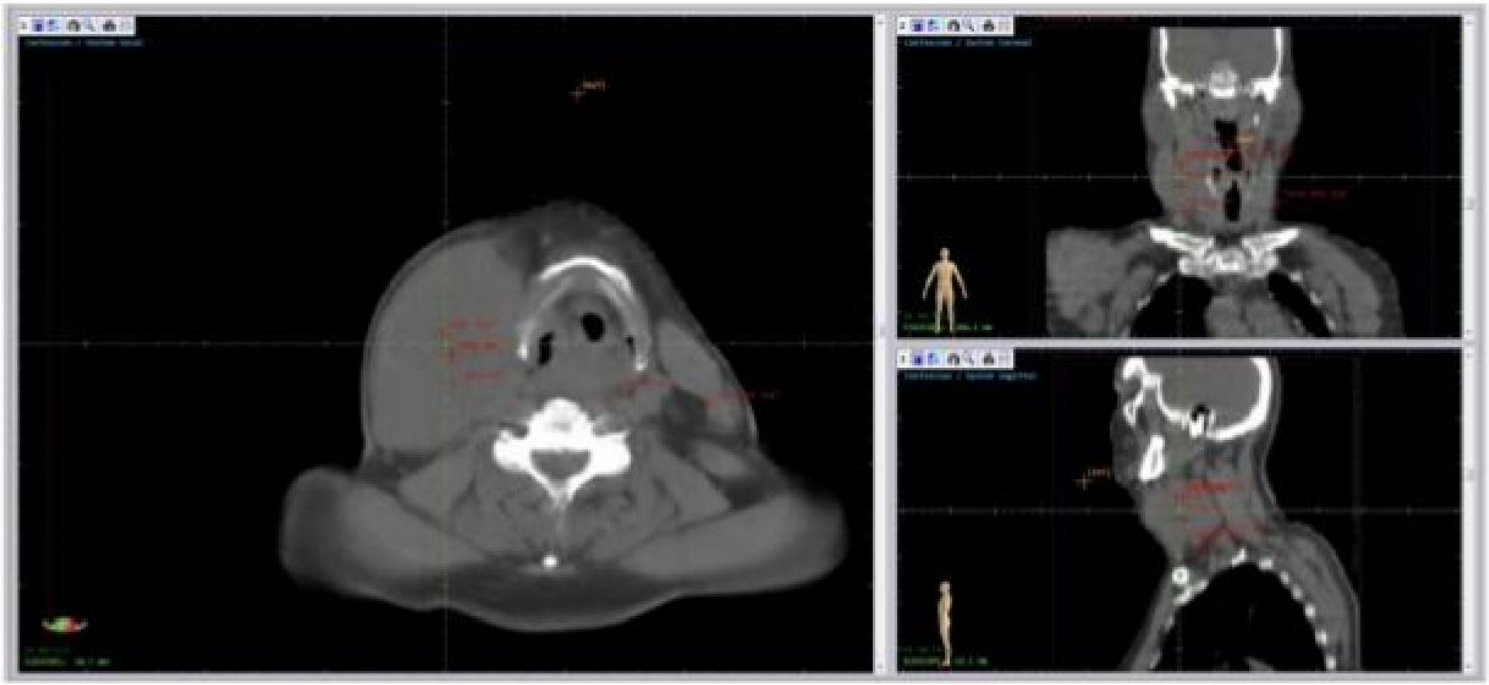


Figura 1: registro de imagen del MIRS, donde se observa de la tomografía de simulación en el servicio de radioterapia, cortes axial, sagital y coronal, con isocentro en tumoración.

PLANIFICACION 3D CON 9 CAMPOS

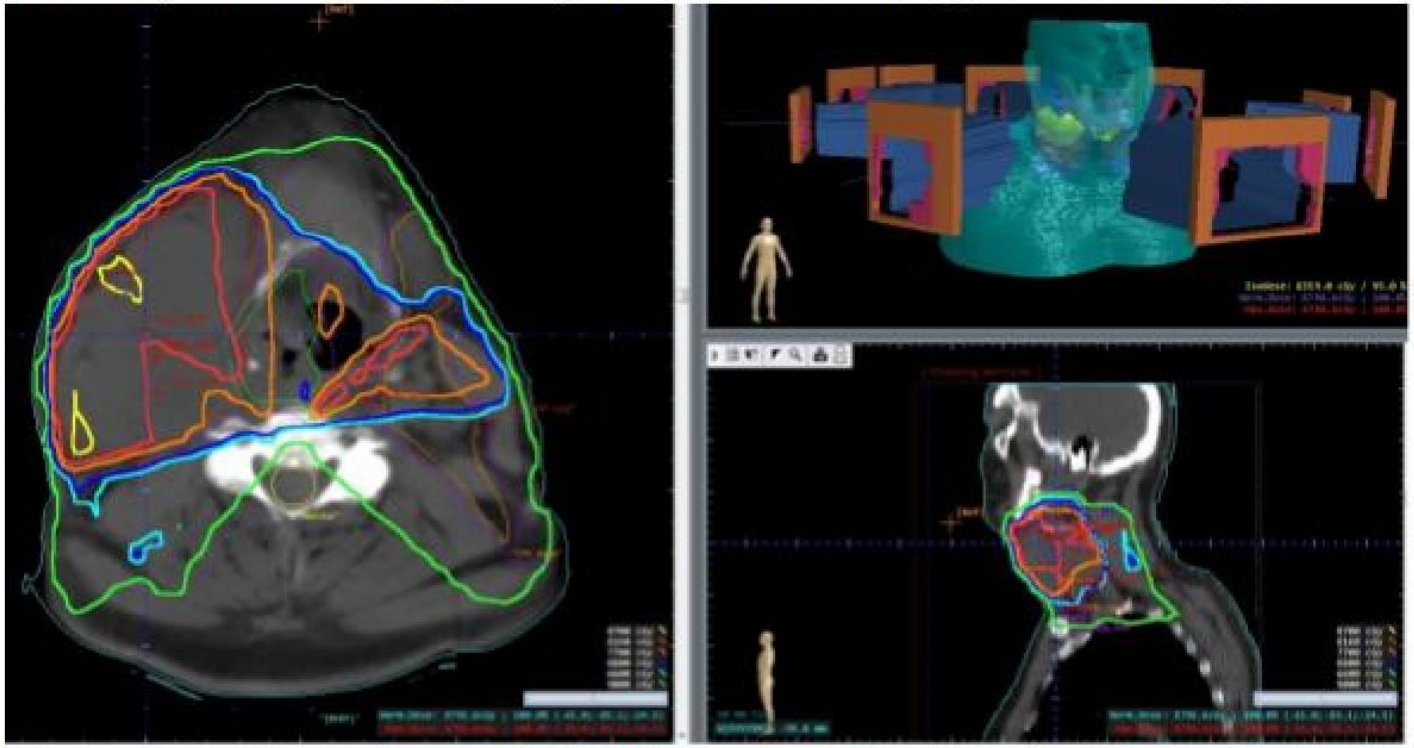


Figura 2: registro de imagen del MIRS de primer planificación. A la izquierda corte axial de tomografía de simulación con curvas de isodosis. A la derecha superior, vista 3D del Body con los 9 campos de tratamiento. A la derecha inferior corta sagital de tomografía de simulación con curvas de isodosis.

RTADAPTATIVA (ART)

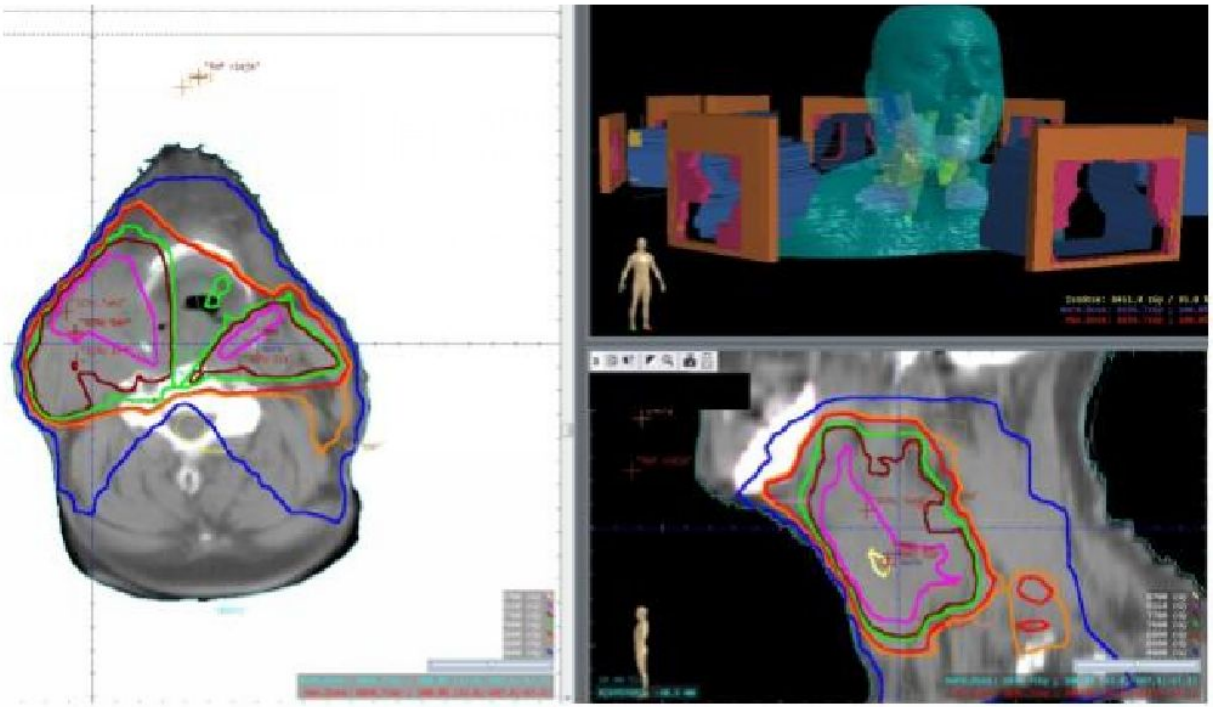


Figura 3: registro de imagen del MIRS de segunda planificación. A la izquierda corte axial de tomografía de simulación con curvas de isodosis. A la derecha superior, vista 3D con regiones y con los 9 campos de tratamiento. A la derecha inferior corta sagital de tomografía de simulación con curvas de isodosis.

PET-CT CONTROL

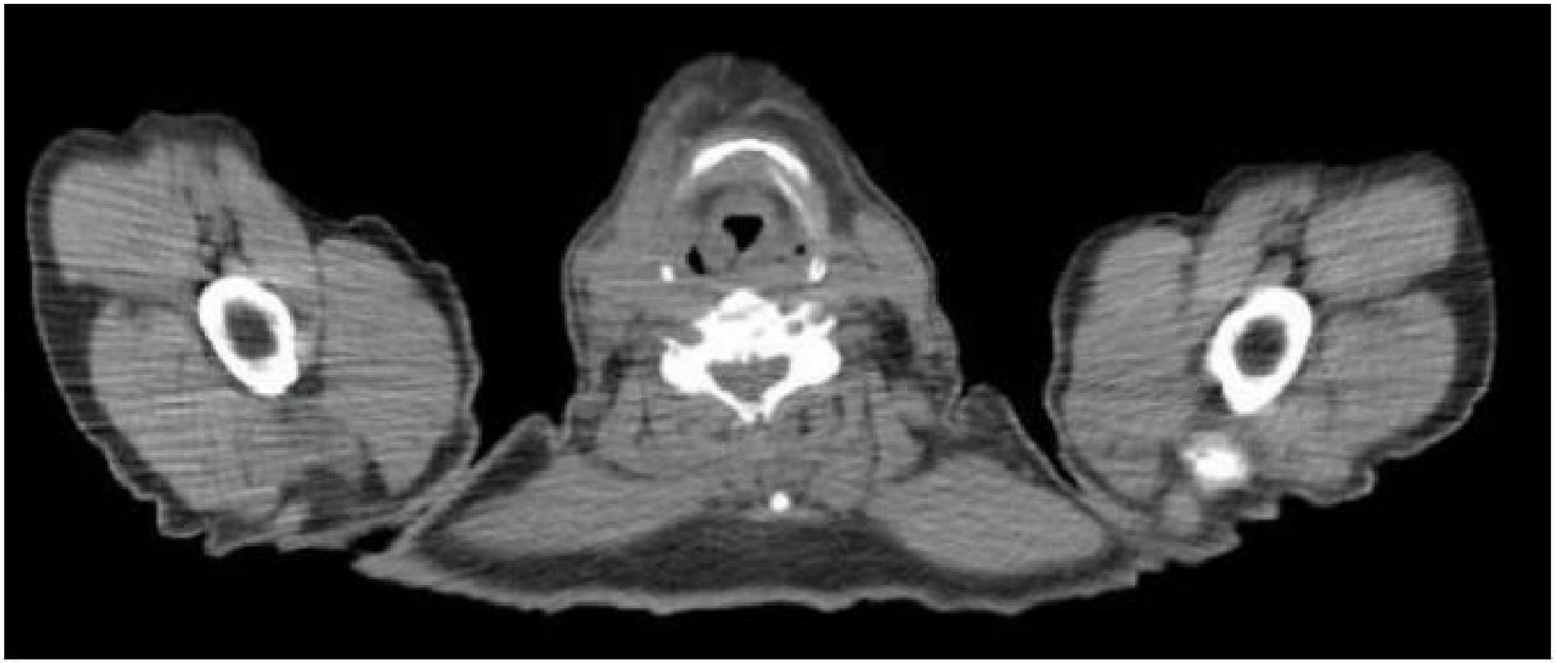


Figura 4: registro de imagen de PET-IQ-TC del 12/06/2019, corte axial a la misma altura del corte axial de la figura 1.

Original Article

Five versus ten fractions per week radiotherapy in locally advanced head and neck cancer

ABSTRACT

Introduction: Conventional fractionated radiotherapy (CFRT) is in use since a long time, but the invention of altered fractionation such as hyperfractionation has improved survival in head and neck squamous cell cancer (HNSCC).

Aims: Our aim of this prospective randomized study is to compare conventional 5 fractions per week (CFRT) with hyperfractionation 10 fractions per week (hyperfractionated radiotherapy [HFRT]) in locally advanced head and neck cancer.

Patients and Methods: The study period is from November 2013 to April 2015. Totally, 100 patients with proven head and neck cancer were submitted to radiotherapy on theratron 780 (cobalt 60) machine. Fifty patients in each CFRT group and HFRT group randomized to receive radiotherapy following induction chemotherapy. Patients in CFRT group have received 66–70 Gy/33–35 fractions Monday to Friday, while HFRT group have received 70.4 Gy/64 fractions Monday to Friday.

Results: Our results show manageable toxicity profile of a combined therapy consisting of cisplatin and paclitaxel, followed by concomitant chemoradiotherapy in the form of either CFRT or HFRT with cisplatin as a radiosensitizer in both treatment groups. The overall response at the completion of radiotherapy was 95.7% in HFRT versus 89.5% in CFRT with 76.6% complete response in HFRT versus 64.6% in CFRT.

Conclusions: After induction chemotherapy, HFRT seems to be more efficacious than CFRT in locally advanced HNSCC, by increasing significantly the probability of progression-free survival and locoregional control.

KEY WORDS: Conventional fractionation (conventional fractionated radiotherapy), head and neck cancer, hyperfractionation (hyperfractionated radiotherapy)

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E-mail: drramanjis@gmail.com

J Can Res Ther 2017;13:224-9.

Protocolo RT

Radiotherapy protocol

Energy

All patients were treated with Cobalt-60 Teletherapy unit (Theratron 780) with a source-to-surface or source-to-isocenter distance of 80 cm.

Target volume

Initial tumor volume consisted of primary tumor, involved lymph nodes, and probable subclinical disease. The irradiation field was reduced after 46 Gy to spare the spinal cord.

Technique

All patients were treated in the supine position with shoulder retraction. Depending on the primary tumor site, patients were treated with two parallel-opposed lateral fields.

Simulation X-ray film with lead wire markings was taken for verification of radiation portals, and necessary corrections according to the standard portals were made before the start of treatment.

J Can Res Ther 2017;13:224-9.

Radioterapia adyuvante en paciente laringectomizado

Int J Radiat Oncol Biol Phys. Author manuscript; available in PMC 2013 Dec 1.
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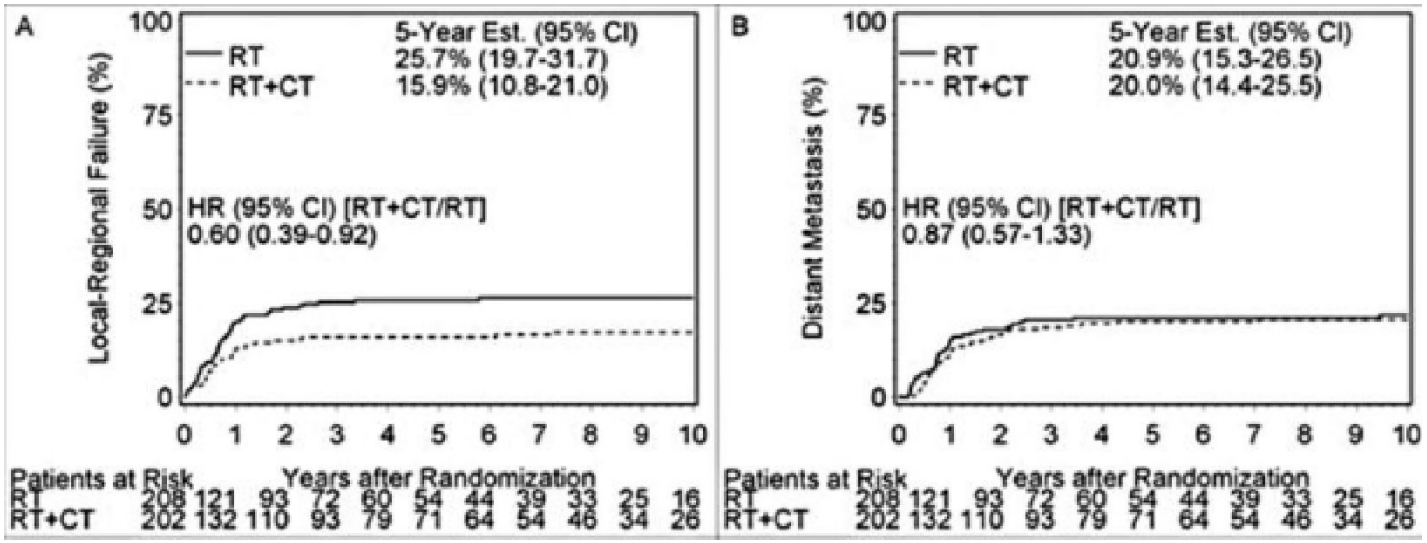
Published online 2012 Jun 30. doi: 10.1016/j.ijrobp.2012.05.008

PMCID: PMC3465463
NIHMSID: NIHMS376521
PMID: 22749632

Long-Term Follow-Up of the RTOG 9501/Intergroup Phase III Trial: Postoperative Concurrent Radiation Therapy and Chemotherapy in High-Risk Squamous Cell Carcinoma of the Head & Neck

Jay S. Cooper, MD, Qiang Zhang, PhD, Thomas F. Pajak, PhD, Arlene A. Forastiere, MD, John Jacobs, MD, Scott B. Saxman, MD, Julie A. Kish, MD, Harold E. Kim, MD, Anthony J. Cmelak, MD, Marvin Rotman, MD, Robert Lustig, MD, John F. Ensley, MD, Wade Thorstad, MD, Christopher J. Schultz, MD, Sue S. Yom, MD, and K. Kian Ang, MD, PhD, MD



Int J Radiat Oncol Biol Phys. 2012 Dec 1; 84(5): 1198–1205.

Dosis de adyuvancia

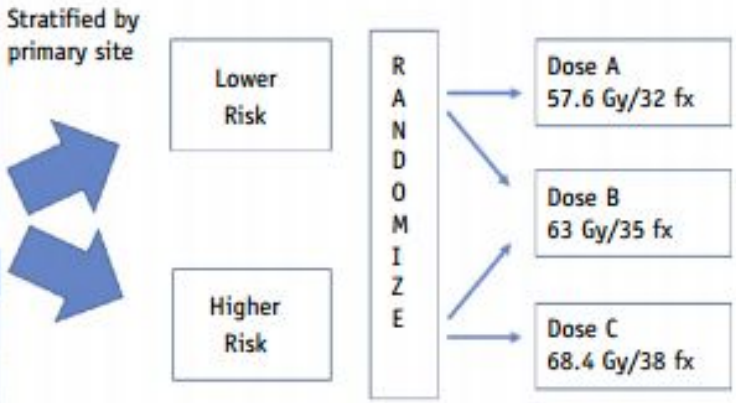
Recurrence risk at primary site

Criteria	Points				
	0	1	2	3	4
Stage	T1-T2	–	T3	–	T4
Margins	-ve	–	Mucosa +ve-> -ve	Deep +ve -> -ve	Close final margins (< 5 mm)
Nerve invasion	-ve	–	Minor nerve(s) +ve	Minor nerve(s) +ve	Major nerve +ve
Neck nodes	N0	N1	≥N2	–	–

Recurrence risk in the neck

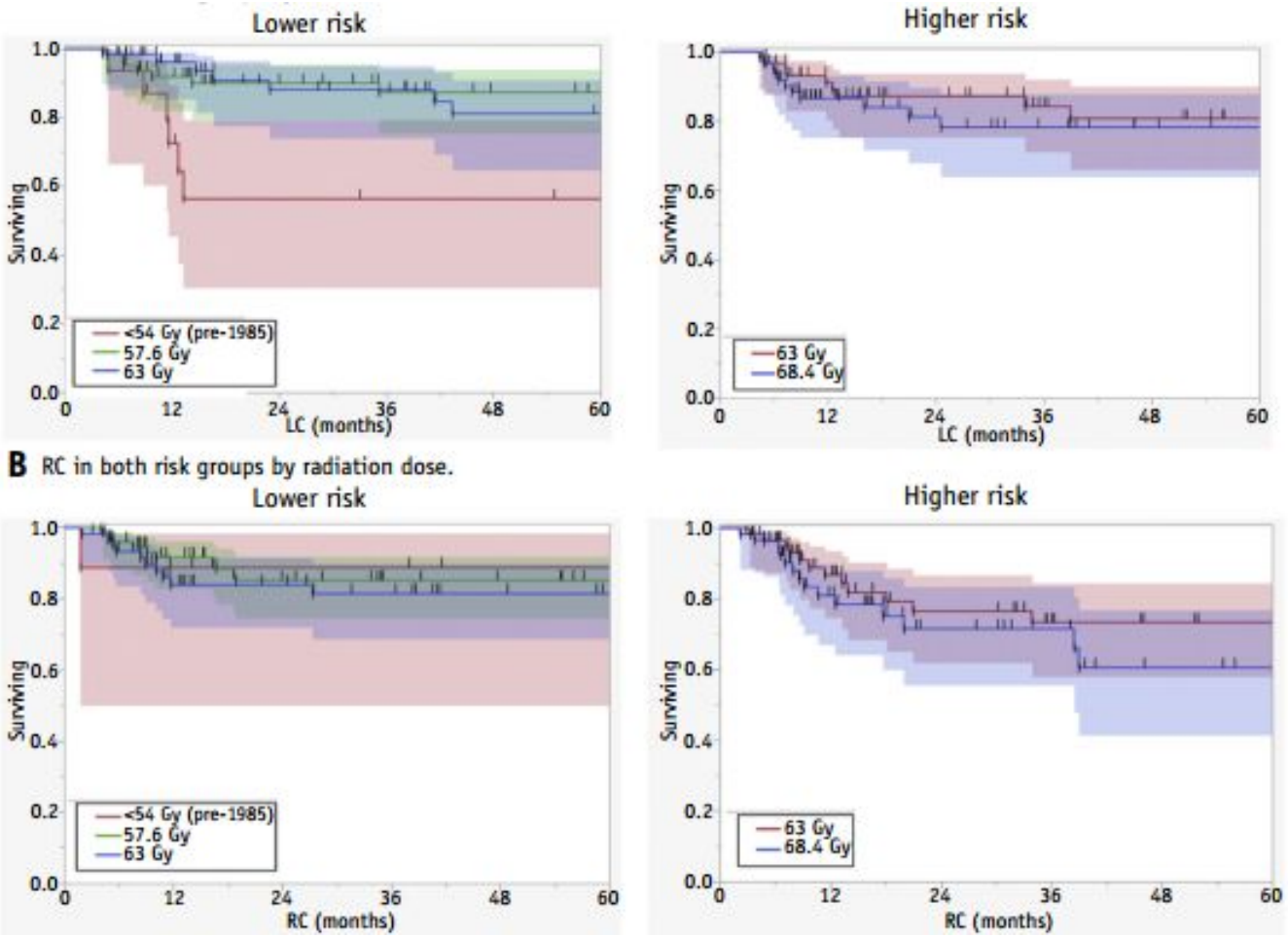
Criteria	Points				
	0	1	2	3	4
N. Of nodes	0	1	2-3	≥4 or matted	–
N. Of nodal groups	0-1	2	3	≥4	–
Size/ECE	–	<3 cm without ECE	>3 cm without ECE	<3 cm with ECE	3-6 cm with ECE
Direct invasion	–	–	–	Muscle; skin; nerve; vein	Carotid; base of skull

Point range = 0- 14; Low risk = 1-6; High risk 7- 14



Int J Radiation Oncol Biol Phys, Vol. 98, No. 5, pp. 1002–1011, 2017

Dosis de adyuvancia



Int J Radiation Oncol Biol Phys, Vol. 98, No. 5, pp. 1002–1011, 2017

Re irradiación

Table 2. Selected re-irradiation trials for locally recurrent head-and-neck cancer

Investigators	Patients (*n*)	Chemotherapy	Median radiation dose (Gy)	Median follow-up (mo)	LRC (%)	MS (mo)
De Crevoisier *et al.* (8)	169	Some	60	70	NA	10
Haraf *et al.* (34)	45	Yes	50	41	20	8.5
Spencer *et al.* (10)	81	Yes	60	23	NA	8.5
Langer *et al.* (11)	105	Yes	60	24	NA	12.1
Salama *et al.* (23)	115	Yes	65	67	51	11
Lee *et al.* (16)	105	Some	59	35	42	15
Sulman *et al.* (26)	78	Some	60	25	64	28
Watkins *et al.* (30)	39	Yes	60	25	31	19
Dawson *et al.* (24)	60	Some	60	60	29	13
Popovtzer *et al.* (35)	66	Some	68	42	19	NA

Abbreviations: LRC = locoregional control; MS = median survival; NA = not available.

RT PALIATIVA

National Comprehensive Cancer Network®

NCCN Guidelines Version 3.2019
Head and Neck Cancers
NCCN Evidence Blocks™

NCCN Guidelines Index
Table of Contents
Discussion

RADIATION TECHNIQUES*

- **Palliative 3D Conformal RT, IMRT, and SBRT**
  - **Palliative radiation should be considered in the advanced cancer setting when curative-intent treatment is not appropriate.**
  - **No general consensus exists for appropriate palliative RT regimens in head and neck cancer. For those who are either medically unsuitable for standard RT or who have widely metastatic disease, palliative RT should be considered for relief or prevention of locoregional symptoms if the RT toxicities are acceptable. RT regimens should be tailored individually; severe RT toxicities should be avoided when treatment is for palliation.**
  - **Some recommended RT regimens include:**
    - **50 Gy in 20 fractions;[36]**
    - **37.5 Gy in 15 fractions (if well tolerated, consider adding 5 additional fractions to 50 Gy);**
    - **30 Gy in 10 fractions;**
    - **30 Gy in 5 fractions:** give 2 fractions/wk with ≥3 days between the 2 treatments; and[37]**
    - **44.4 Gy in 12 fractions, in 3 cycles (for each cycle, give 2 fractions six hours apart for 2 days in a row, and treatments must exclude the spinal cord after second cycle).[38,39] Reassessment should be done at 1- to 3-week intervals.**
  - **The use of shorter more hypofractionated treatment courses may be indicated, but the dose tolerance of the spinal cord and neural structures must be evaluated carefully in light of fraction size.**
  - **Carefully evaluate the patient's performance status, treatment tolerance, tumor response, and/or any systemic progression. Other palliative/supportive care measures include analgesics, nutrition support, targeted therapy, immunotherapy, or chemotherapy, if indicated (see the NCCN Guidelines for Supportive Care).**

RTOG 8502 PALIATIVO

Published in final edited form as:

Oral Oncol. 2015 October ; 51(10): 957–962. doi:10.1016/j.oraloncology.2015.07.011.

Palliative head and neck radiotherapy with the RTOG 8502 regimen for incurable primary or metastatic cancers

Benjamin H Lok[1], **Ginger Jiang**[1,2], **Stanley Gutiontov**[3], **Ryan M Lanning**[1], **Sudeepta Sridhara**[1], **Eric J Sherman**[4], **Chiaojung Jillian Tsai**[1], **Sean M McBride**[1], **Nadeem Riaz**[1], and **Nancy Y Lee**[1]

[1]Department of Radiation Oncology, Memorial Sloan Kettering Cancer Center, 1275 York Avenue, New York, NY 10065, USA

[2]Harvard Medical School, 25 Shattuck St, Boston, MA 02115, USA

[3]Feinberg School of Medicine - Northwestern University, 303 E Chicago Avenue, Chicago, IL 60611, USA

[4]Department of Medical Oncology, Head and Neck Oncology Service, Memorial Sloan Kettering Cancer Center

QUAD SHOT

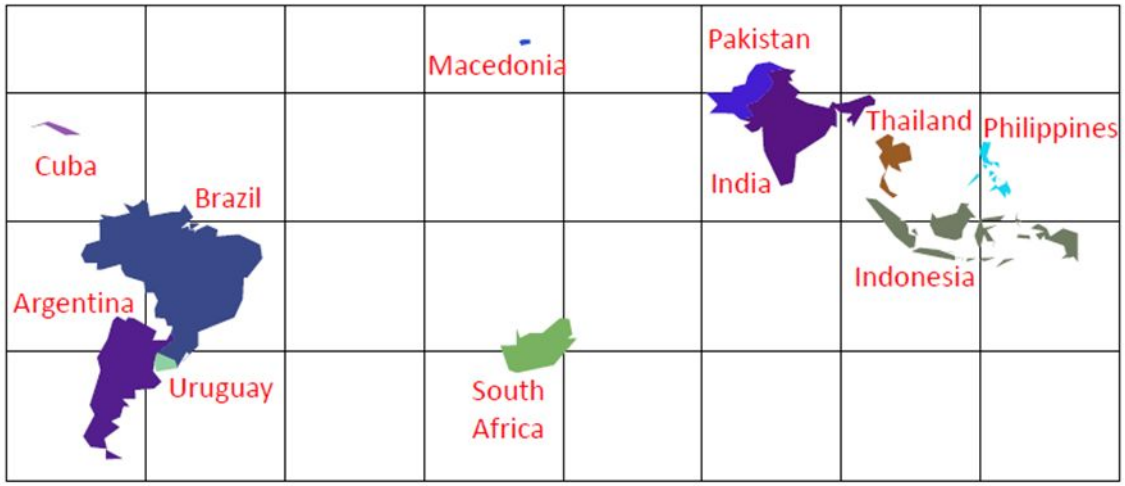
- 3.7 Gy dos veces por día, 2 días consecutivos
- Se repite a los 30 días
- Hasta completar un máximo de 4 ciclos

RTOG 8502

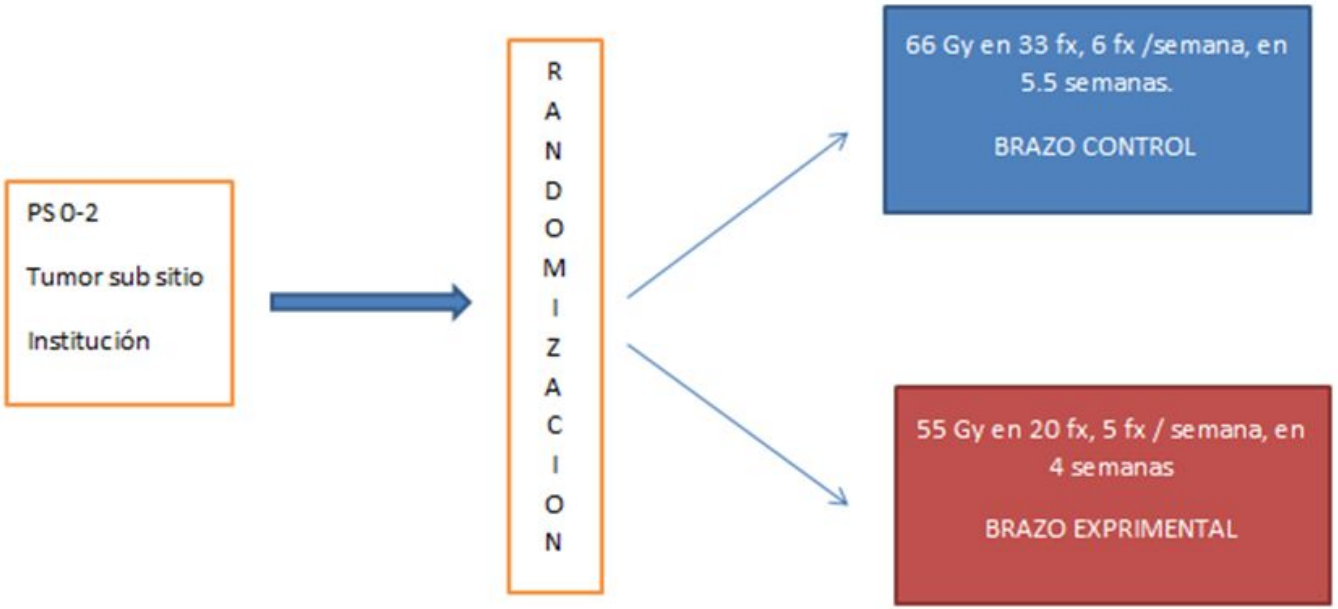
- Respuesta paliativa de los síntomas fue de un 65 %
- Toxicidad grado 3 fue de un 5 %, la mas común mucositis.
- Mayor número de ciclos de RT correlacionados con una mayor respuesta paliativa y supervivencia.

HYPNO

IAEA-CRP E.3.30.35 title: “Resource Sparing Curative
Radiotherapy for Locally Advanced Squamous Cell Cancer of
the Head and Neck”



HYPNO


PS 0-2
Tumor sub sitio
Institución
RANDOMIZACION
66 Gy en 33 fx, 6 fx /semana, en 5.5 semanas.
BRAZO CONTROL
55 Gy en 20 fx, 5 fx / semana, en 4 semanas
BRAZO EXPRIMENTAL

EQD2

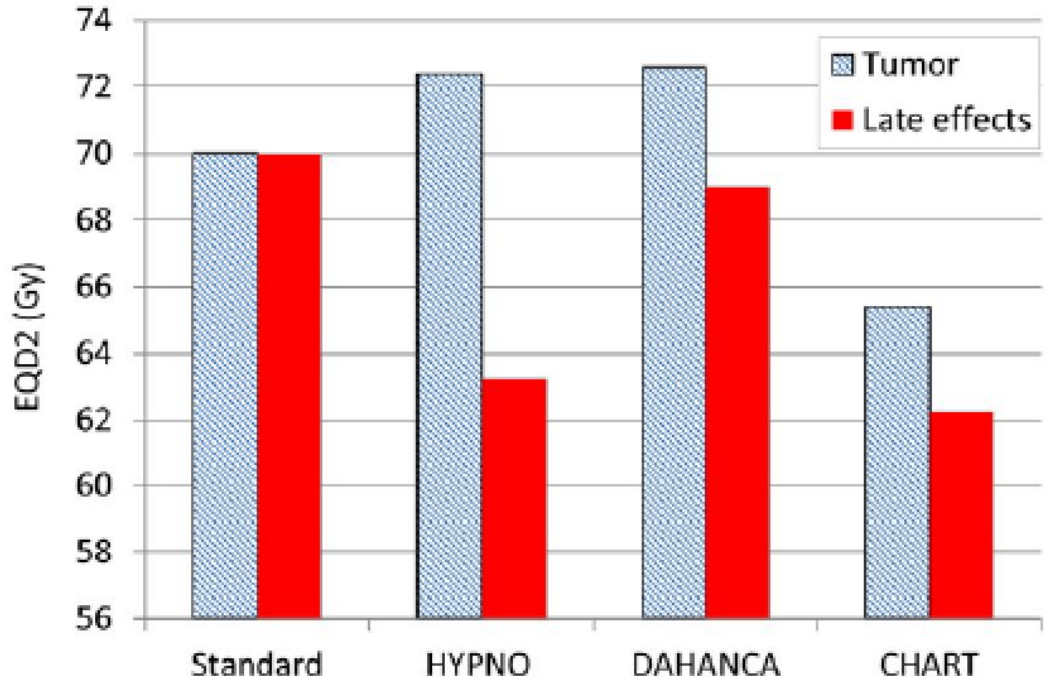


fig. 1. Dosis equivalente estimadas para tumores ($\alpha / \beta = 10$ Gy, Dprolif = 0.65 Gy / día, inicio de repoblación acelerada: 28 días) y efectos tardíos del tejido normal ($\alpha / \beta = 3$ Gy) en comparación con un esquema convencional al entrega de 70 Gy en 35 fracciones.

HYPNO

Study Type:	Interventional (Clinical Trial)
Estimated Enrollment:	836 participants
Allocation:	Randomized
Intervention Model:	Parallel Assignment
Masking:	None (Open Label)
Primary Purpose:	Treatment
Official Title:	A Randomized Multicenter Trial of Accelerated Hypo - vs. Normo-fractionated Radiotherapy for Head and Neck Squamous Cell Carcinoma (IAEA-**HYPNO** Trial)
Study Start Date:	March 2014
Estimated Primary Completion Date:	November 2020
Estimated Study Completion Date:	November 2021

SWITCH 02

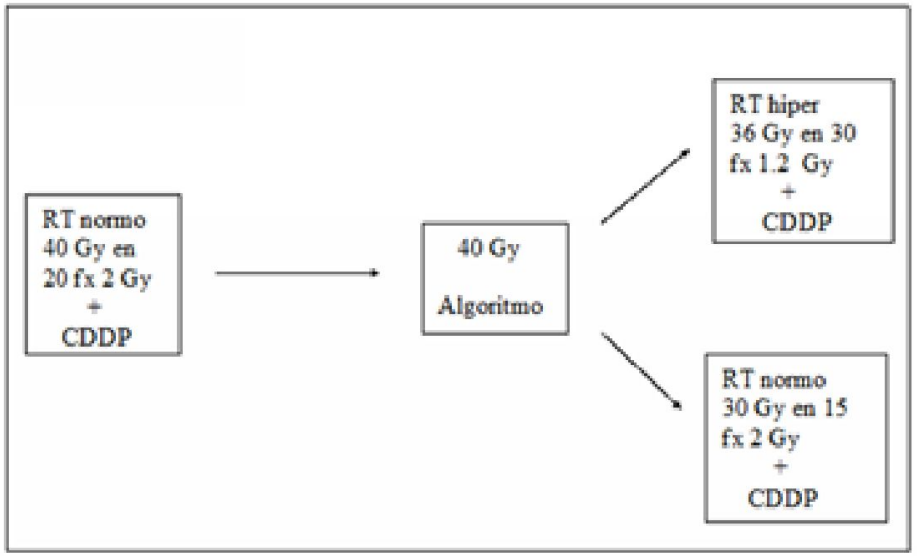
Protocolo de Trabajo Científico. Switch 02.

Descripción de nueva técnica en hiperfracionamiento en cáncer cabeza y cuello. Fase I-II.

Instituto Nacional del Cáncer.

ASSE.

Montevideo, Uruguay.



fuente: elaboración propia

Para llevarse a casa

- El tratamiento Radiante con teleterapia en ORL sigue siendo unos de los pilares principales en el control de esta patología.

- La misma se puede utilizar en todos los estadios de la enfermedad adecuándose según disponibilidad de equipamiento y tecnología

- Conocer las distintos esquemas de fraccionamiento e implementarlos para cada caso particular es esencial en la probabilidad de aumentar el control tumoral.

Gracias