Sovradosaggio con radioterapia stereotassica dopo Radioterapia ad Intensità Modulata (IMRT) in pazienti con carcinoma del rinofaringe.

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CLINICAL INVESTIGATION **Head and Neck**

EXPERIENCE IN FRACTIONATED STEREOTACTIC BODY RADIATION THERAPY BOOST FOR NEWLY DIAGNOSED NASOPHARYNGEAL CARCINOMA

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Boost con CK-SBRT frazionata 12-15 Gy (3 Gy/fr) dopo RT convenzionale (64.8-68.4 Gy - 1.8 Gy frazione)

Controllo locale a 3 anni 93.1%

Conclusioni:

CK-SBRT come boost è un trattamento fattibile, ottiene un buon controllo locale senza complicanze severe.

(64 Pz 2003 – 2006)

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0360-3016/08/$–see front matter

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CLINICAL INVESTIGATION **Head and Neck**

EXCELLENT LOCAL CONTROL WITH STEREOTACTIC RADIOTHERAPY BOOST AFTER EXTERNAL BEAM RADIOTHERAPY IN PATIENTS WITH NASOPHARYNGEAL CARCINOMA

Wendy Hara, M.D.,* Billy W. Loo, Jr., M.D., Ph.D.,* Don R. Goffinet, M.D.,* Steven D. Chang, M.D.,† John R. Adler, M.D.,† Harlan A. Pinto, M.D.,‡ Willard E. Fee, M.D.,§ Michael J. Kaplan, M.D.,§ Nancy J. Fischbein, M.D.,‖ and Quynh-Thu Le, M.D.*

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Boost CK-SBRT dopo IMRT (66 Gy 2-2.2 Gy fr) :
7-15 Gy in unica frazione
Freedom From Local Relapse a 5 aa : 98%; OS: 69%
Conclusioni:
SBRT buon controllo locale
Bisogna migliorare la delineazione del target per evitare complicanze a lungo termine.
Necessità di nuovi farmaci.
82 Pz

Casistica (2010-2014)

Tot 5 pz

- CT neoadiuvante e/o concomitante
- Trattamento IMRT precedente
- Stadio di malattia cT2-cT4 all'esordio
- Massimo volume malattia post IMRT 24 cc

CASISTICA (2010-2014)		
Maschi Femmine	3 2	
Ca. indiff. tipo RNF Ca. squamoso	3 Pz 2 Pz	
Età media	53,2 aa	Range 39 - 72
Follow up medio	35.5 mesi	Range 26 - 45

	TNM	STADIO
Pz 1	cT2 N1	II
Pz 2	cT2 N2	III
Pz 3	cT4 N1	IV a
Pz 4	cT4 N0	IV a
Pz 5	cT2 N2	III

CHEMIOTERAPIA	
Pz 1	Cisplatino sett. concomitante + CHT sec. schema Al Sarraf a dose ridotta di consolidamento.
Pz 2	PEE x 2 neoadiuvante (Cispl. +Etoposide+Epirubicina) , Carbopl. concomitante e PEE x2 successivo.
Pz 3	Al Sarraf x 2 neadiuvante e Cisplatino concomitante
Pz 4	PEE x2 neoadiuvante, Cisplatino concomitante e poi PEE x2
Pz 5	Cispl + FU neoadiuvante ; Cisplatino sett. concomitante

TRATTAMENTO RT

4 Pz	PTV 1 60 Gy	PTV 2 54 Gy	SIB-IMRT (30 fr)
1 Pz	PTV 1 63.90 Gy	PTV 2 60 Gy	SIB-IMRT (30 fr)

Tossicità RTOG				
	Grado 1	Grado 2	Grado 3	Grado 4
Cute	0	5	0	0
Mucose	0	4	1	0
Disfagia Odinofagia	2	2	1	0

PET – TAC di ristadiazione dopo almeno 40 gg dal termine RT/CT concomitante

	Pre RT	Post RT	
Pz 1	cT2 N1	cT1 N0	Sensibile diminuzione del SUV
Pz 2	cT4 N1	cT2 N0	Sensibile diminuzione del SUV
Pz 3	cT4 N1	cT2 N0	Sensibile diminuzione del SUV
Pz 4	cT4 N2	cT3 N0	Sensibile diminuzione del SUV
Pz 5	cT2 N2	cT1N0	Sensibile diminuzione del SUV

Intervallo termine IMRT inizio boost CK-SBRT da 1.5 a 3 mesi e 12 mesi per il paziente recidivato (rispettivamente di 1.5, 2.5, 3, 3 e 12 mesi)

Trattamento CK-SRBT :

- **confezionamento nuovo mould**
- **TAC di centratura: spirale, slides 1 mm senza intervalli, dal vertex a C7**

Pianificazione

contouring PTV: lesione visibile alla PET post EBRT + 2/3 mm di margine

Dose (Gy)	N° fr	Isodose di prescrizione	N° Pz
12	2	80%	1
16	2	77%	2
16	2	80%	3
20	2	80%	4
24	3	80%	5

SUMMARY OF SUGGESTED DOSE CONSTRAINS FOR CRITICAL ORGANS

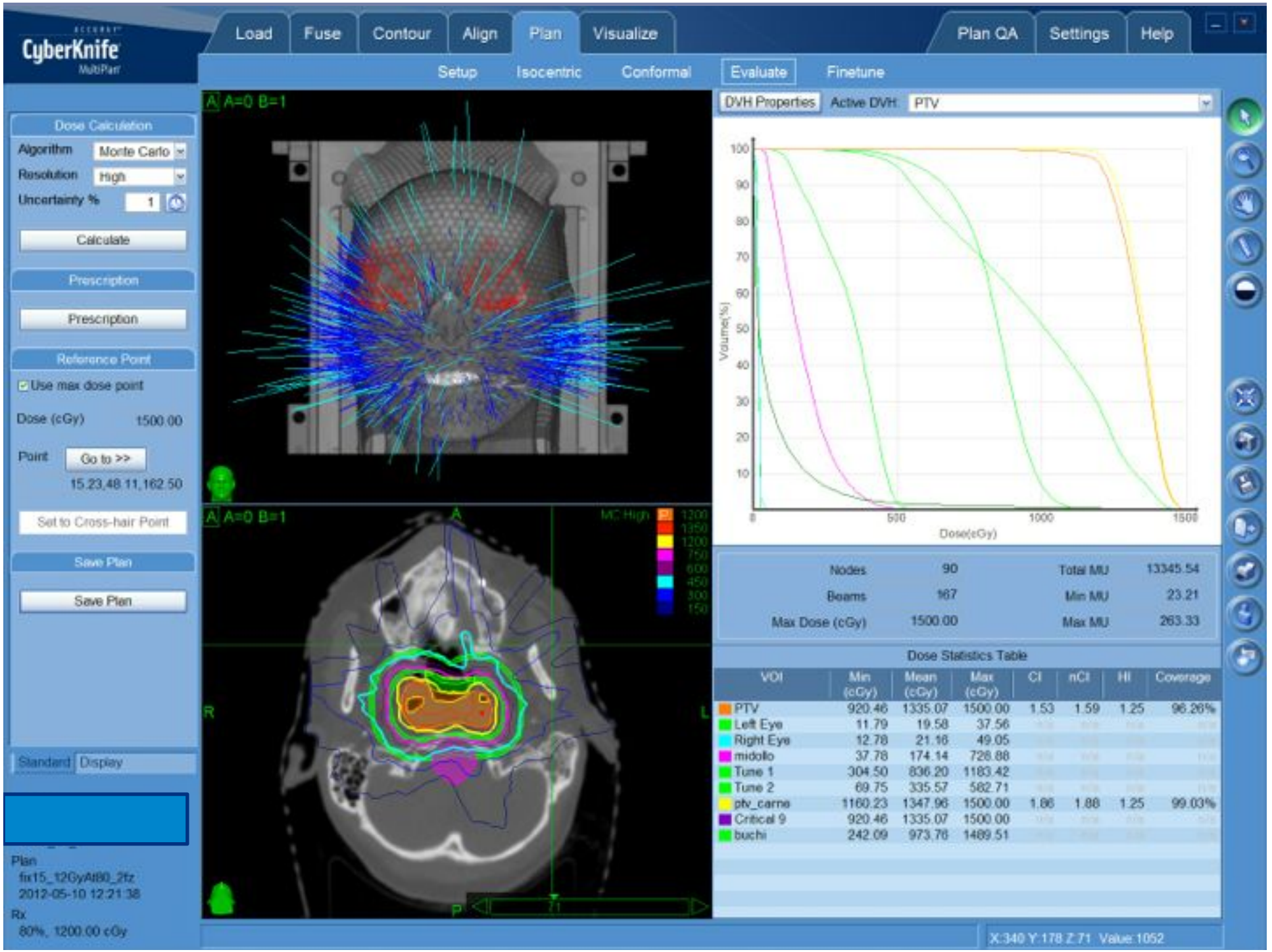
Stereotactic body radiation therapy : The report of AAPM Task Group 101

		ONE FRACTION		THREE FRACTIONS		FIVE FRACTIONS		
SERIAL TISSUE	MAX CRITICAL VOLUME ABOVE THRESHOLD	THRESHOLD DOSE (Gy)	MAX POINT DOSE (Gy)**	THRESHOLD DOSE (Gy)	MAX POINT DOSE (Gy)**	THRESHOLD DOSE (Gy)	MAX POINT DOSE (Gy)**	ENDPOINT (≥GRADE 3)
Optic pathway	<0.2 cc	8 Gy	10 Gy	15.3 Gy (5.1 Gy/fx)	17.4 Gy (5.8 Gy/fx)	23 Gy (4.6 Gy/fx)	25 Gy (5 Gy/fx)	Neuritis
Cochlea			9 Gy		17.1 Gy (5.7 Gy/fx)		25 Gy (5 Gy/fx)	Hearing loss
Brainstem (not medulla)	<0.5 cc	10 Gy	15 Gy	18 Gy (6 Gy/fx)	23.1 Gy (7.7 Gy/fx)	23 Gy (4.6 Gy/fx)	31 Gy (6.2 Gy/fx)	Cranial neuropathy
Spinal cord and medulla	<0.35 cc <1.2 cc	10 Gy 7 Gy	14 Gy	18 Gy (6 Gy/fx) 12.3 Gy (4.1 Gy/fx)	21.9 Gy (7.3 Gy/fx)	23 Gy (4.6 Gy/fx) 14.5 Gy (2.9 Gy/fx)	30 Gy (6 Gy/fx)	Myelitis
Spinal cord subvolume (5–6 mm above and below level treated per Ryu)	<10% of subvolume	10 Gy	14 Gy	18 Gy (6 Gy/fx)	21.9 Gy (7.3 Gy/fx)	23 Gy (4.6 Gy/fx)	30 Gy (6 Gy/fx)	Myelitis

I limiti di dose sono stati calcolati in relazione alle tabelle di riferimento ed alla dose totale già ricevuta con IMRT.

Constraints (Gy)	Pz 1	Pz 2	Pz 3	Pz 4	Pz 5
N° frazioni	3	2	2	2	2
Midollo allungato	10 Gy	8 Gy	6 Gy	7.5 Gy	8 Gy
Chiasma	4 Gy	4 Gy	5 Gy	5 Gy	4 Gy
Midollo	14 Gy	10 Gy	4 Gy	5 Gy	5 Gy
nn. ottici	14 Gy	4 Gy	10 Gy	10 Gy	2 Gy

Volume PTV	
Pz 1	25.5 cc
Pz 2	13.4 cc
Pz 3	7.6 cc
Pz 4	24.4 cc
Pz 5	14.3 cc


CyberKnife
MultiPlan
Load
Fuse
Contour
Align
Plan
Visualize
Plan QA
Settings
Help
Setup
Isocentric
Conformal
Evaluate
Finetune
Dose Calculation
Algorithm
Monte Carlo
Resolution
High
Uncertainty %
1
Calculate
Prescription
Prescription
Reference Point
Use max dose point
Dose (cGy)
1500.00
Point
Go to >>
15.23,48.11,162.50
Set to Cross-hair Point
Save Plan
Save Plan
Standard
Display
Plan
fix15_12GyAt80_2fz
2012-05-10 12:21:38
Rx
80%, 1200.00 cGy
A A=0 B=1
A A=0 B=1
MC High
1200
1350
1200
750
600
450
300
150
R
L
P
DVH Properties
Active DVH
PTV
Volume(%)
Dose(cGy)
100
90
80
70
60
50
40
30
20
10
0
500
1000
1500
Nodes
90
Beams
167
Max Dose (cGy)
1500.00
Total MU
13345.54
Min MU
23.21
Max MU
263.33
Dose Statistics Table
VOI
Min (cGy)
Mean (cGy)
Max (cGy)
CI
nCI
HI
Coverage
PTV 920.46 1335.07 1500.00 1.53 1.59 1.25 96.26%
Left Eye 11.79 19.58 37.56
Right Eye 12.78 21.16 49.05
midollo 37.78 174.14 728.88
Tune 1 304.50 836.20 1183.42
Tune 2 69.75 335.57 582.71
ptv_carne 1160.23 1347.96 1500.00 1.86 1.88 1.25 99.03%
Critical 9 920.46 1335.07 1500.00
buchi 242.09 973.76 1489.51
X:340 Y:178 Z:71 Value:1052

Non rilevata Tossicità Acuta o Tardiva dopo CK-SBRT per il follow up fino ad ora eseguito

Risposta		Mesi
RC	NED	44
RC	NED	31
RP 50%	Exitus per pro	7
RC	Viva con M+	35
RC Pz	NED	26

Conclusioni

CK-SBRT come sovradosaggio in pazienti trattati con SIB-IMRT per carcinoma del Rinofaringe è un trattamento fattibile e ben tollerato che dà un buon controllo locale di malattia.

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Original article

Evolution of treatment for nasopharyngeal cancer – Success and setback in the intensity-modulated radiotherapy era

Anne W.M. Lee [a,*], Wai Tong Ng [b], Lucy L.K. Chan [b], Wai Man Hung [b], Connie C.C. Chan [b], Henry C.K. Sze [a], Oscar S.H. Chan [b], Amy T.Y. Chang [b], Rebecca M.W. Yeung [b]

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- **Miglioramento tecniche di RT (IMRT dose escalation/IGRT)**
- **Miglioramento Imaging pre-trattamento**
- **Nuovi farmaci CHT**
- **Risultati nei T4 soddisfacenti?**

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Revue générale

Boost et réirradiation stéréotaxiques des cancers des voies aérodigestives supérieures

Stereotactic irradiation in head and neck cancers

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SBRT come boost o come reirradiazione per migliorare il controllo locale nei tumori della testa collo.

Grazie per l’attenzione

Tossicità Acuta dopo IMRT	(RTOG)
Pz 1	Gr. 2 skin; Gr. 4 mucous membrane; Gr. 3/4 Dysphagia or odynophagia
Pz 2	Gr. 2 skin and mucous membrane; Gr. 1 Dysphagia or odynophagia
Pz 3	Gr. 2 skin mucous membrane; Gr. 1 Dysphagia or odynophagia
Pz 4	Gr. 2 skin and mucous membrane; Gr. 2 Dysphagia or odynophagia
Pz 5	Gr. 2 skin and mucous membrane Gr. 2 dysphagia or odynophagia