


XXXII CONGRESSO NAZIONALE AIRO
XXXIII CONGRESSO NAZIONALE AIRB
XII CONGRESSO NAZIONALE AIRO GIOVANI

AIRO2022

Radioterapia di precisione per un'oncologia innovativa e sostenibile

BOLOGNA, 25-27 NOVEMBRE
PALAZZO DEI CONGRESSI

 Associazione Italiana
Radioterapia e Oncologia clinica

 Società Italiana di Radiobiologia

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e Oncologia
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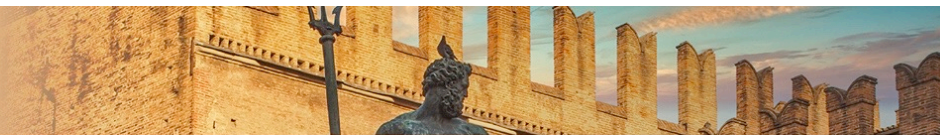
Radioterapia di precisione per un'oncologia innovativa e sostenibile

BOLOGNA, 25-27 NOVEMBRE
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IMPACT OF INTER-OBSERVER VARIABILITY ON FIRST AXILLARY LEVEL DOSIMETRY IN BREAST CANCER RADIOTHERAPY - AN AIRO MULTI- INSTITUTIONAL STUDY

Dott. Giovanni Carlo Mazzola - Division of Radiation Oncology, IRCCS, IEO

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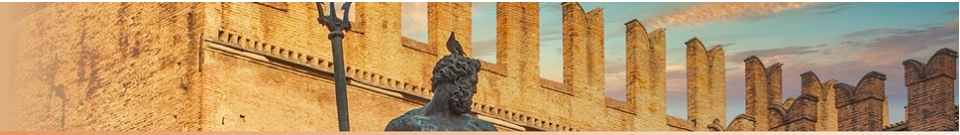


DICHIARAZIONE

Relatore: ***Dott. Giovanni Carlo Mazzola***

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

- Posizione di dipendente in aziende con interessi commerciali in campo sanitario **NIENTE DA DICHIARARE**
- Consulenza ad aziende con interessi commerciali in campo sanitario **NIENTE DA DICHIARARE**
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario **NIENTE DA DICHIARARE**
- Partecipazione ad Advisory Board **NIENTE DA DICHIARARE**
- Titolarità di brevetti in compartecipazione ad aziende con interessi commerciali in campo sanitario **NIENTE DA DICHIARARE**
- Partecipazioni azionarie in aziende con interessi commerciali in campo sanitario **NIENTE DA DICHIARARE**
- Altro



BACKGROUND

- In the locoregional RT, L1 is expected to receive a certain amount of dose from the contribution of the breast/chest wall and the infra/supraclavicular planning target volumes (PTV)
- The clinical meaning of the incidental L1 dose is not clearly demonstrated but it has been suggested that even lower doses to the inferior part of the axilla can be enough to decrease the risk (RR) of axillary recurrence
- Different techniques have been demonstrated to have different impact on the incidental dose.

Systematic review

Systematic review of the effect of external beam radiation therapy to the breast on axillary recurrence after negative sentinel lymph node biopsy

B. J. van Wely¹, S. Teerenstra², D. A. X. Schinagl³, T. J. Aufenacker⁵, J. H. W. de Wilt¹ and L. J. A. Strobbe⁴

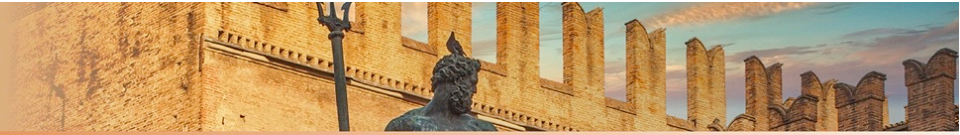
Strahlenther Onkol (2021) 197:820–828
<https://doi.org/10.1007/s00066-021-01808-y>

REVIEW ARTICLE



Incidental axillary dose delivery to axillary lymph node levels I–III by different techniques of whole-breast irradiation: a systematic literature review

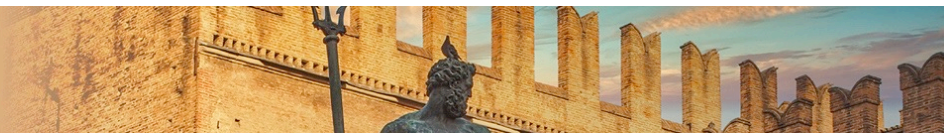
Martin Schmitt¹ · Yvan Pin² · Carole Pflumio³ · Carole Mathelin⁴ · Xavier Pivot³ · Georges Noel¹



AIMS

This study aims to evaluate and **quantify the unintended dose to L1** in the context of **IMRT-based locoregional treatment** using a multicentric platform with the endorsement of the Breast Study Group of the Italian Association of Radiotherapy and Clinical Oncology (AIRO)

COORDINATING CENTRE: IEO
18 RT Italian Centers participated in the study



METHODS

Same population of two previous investigations concerning **variability of contouring** and **radiation treatment planning of the axillary nodes** with the endorsement of the Breast Study Group of the Italian Association of Radiotherapy and Clinical Oncology (AIRO)

Radiotherapy and Oncology 168 (2022) 113–120



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Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

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Original Article

The dosimetric impact of axillary nodes contouring variability in breast cancer radiotherapy: An AIRO multi-institutional study

BJR

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Received:
29 September 2020

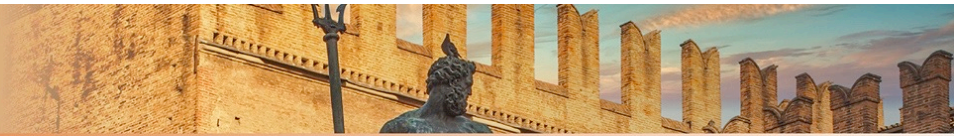
Revised:
23 December 2020

Accepted:
25 January 2021

<https://doi.org/10.1259/bjr.20201177>

FULL PAPER

Geometric contour variation in clinical target volume of axillary lymph nodes in breast cancer radiotherapy: an AIRO multi-institutional study



METHODS

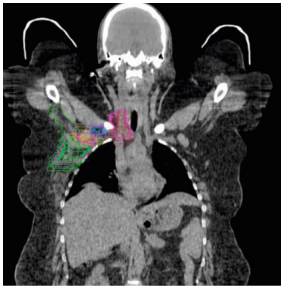


P1

Contouring of L1-L4 by the expert ROs of single centres (SC-CTVs)



SC-PTVs → Planning of locoregional RT (SC-PTVs for L2-4)



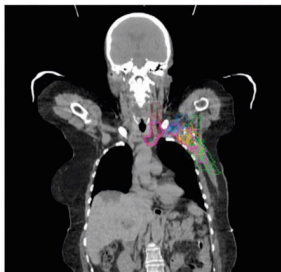
P2



Creation of gold standard (GS) contours for each axillary level of the 3 patients (median of all expert ROs contours)



Replacement of SC-CTVs by GS-CTVs → GS-PTVs (SC-L1 replaced by GS-L1)



P3



All plans were imported into MIM software version 6.1.7 and DVHs were extracted for L1



RESULTS (1)

All plans but one were performed with IMRT techniques using either forward- or inverse-planning or arc volumetric RT

Dosimetry summary reporting first axillary level (GS-L1) percentage coverage for each patient

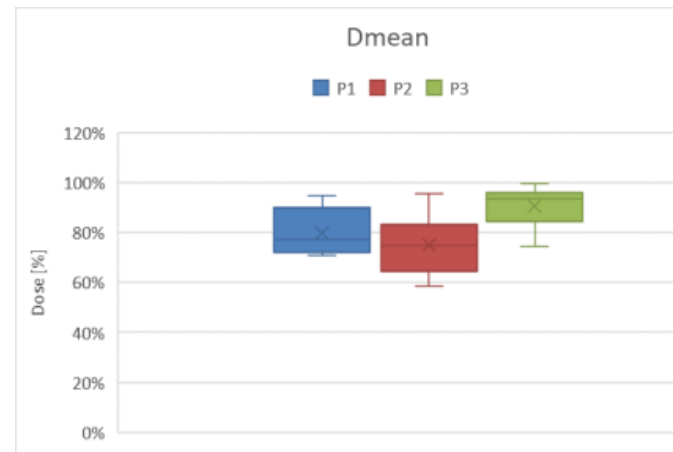
	P1				P2				P3			
	D95 Gy	D2 %	V95%	Dmean Gy	D95 Gy	D2%	V95%	Dmean Gy	D95 Gy	D2%	V95%	Dmean Gy
Median (SD)	26,1 (8.2)	49,5 (2.7)	15 % (19%)	38.6 (4.5)	23.9 (8.3)	50.1 (2.3)	8% (18%)	36.8 (5.2)	33.5 (8.0)	51.5 (2.1)	54% (20%)	44.8 (3.3)
Min-max	6-39.3	44.3-56	0-66%	32.6-50.4	7-42.6	44.4-53.1	0-63%	29.2-47.7	16.2-43.4	47.3-56.2	13-82%	37.4-50.6

$V_{95\%} p = 0.00006$

$D_{mean} p = 0.00019$



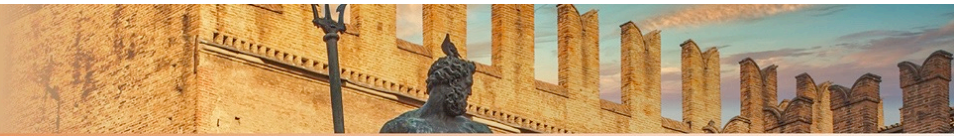
RESULTS (2)



First axillary level (L1) % coverage in terms of **mean dose (Dmean, c)**

Due to the different arm positioning, L1 in patient with impaired arm mobility (P3) received statistically significant higher doses considering all the dosimetric parameters ($D_{mean,p} = .00019$), reaching 45 Gy

No difference were seen according to the body shape and weight (P1 with BMI of 24 and P2 with BMI of 49)



DISCUSSION (1)

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REVIEW ARTICLE



Incidental axillary dose delivery to axillary lymph node levels I–III by different techniques of whole-breast irradiation: a systematic literature review

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Radiotherapy and Oncology 142 (2020) 195–201

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Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com



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Original Article

Irradiation of regional lymph node areas in breast cancer – Dose evaluation according to the Z0011, AMAROS, EORTC 10981-22023 and MA-20 field design



Kai Joachim Borm^a, Markus Oechsner^a, Mathias Düsberg^a, Gabriel Buschner^b, Wolfgang Weber^b, Stephanie Elisabeth Combs^{a,c,d}, Marciana-Nona Duma^{a,c,*}

	AVERAGE DOSE
Technique	LEVEL I
Standard tangents	22-43.5 Gy
High tangents	38-49.7 Gy
IMRT	14.5-42.6 Gy

	LEVEL I		
	Standard shape	Slender body shape	Obese body shape
Standard tangent	42.2±13.8	13±16.7	N.A.
High tangent	48.4±4.1	40.7±13.1	48.7±2.9

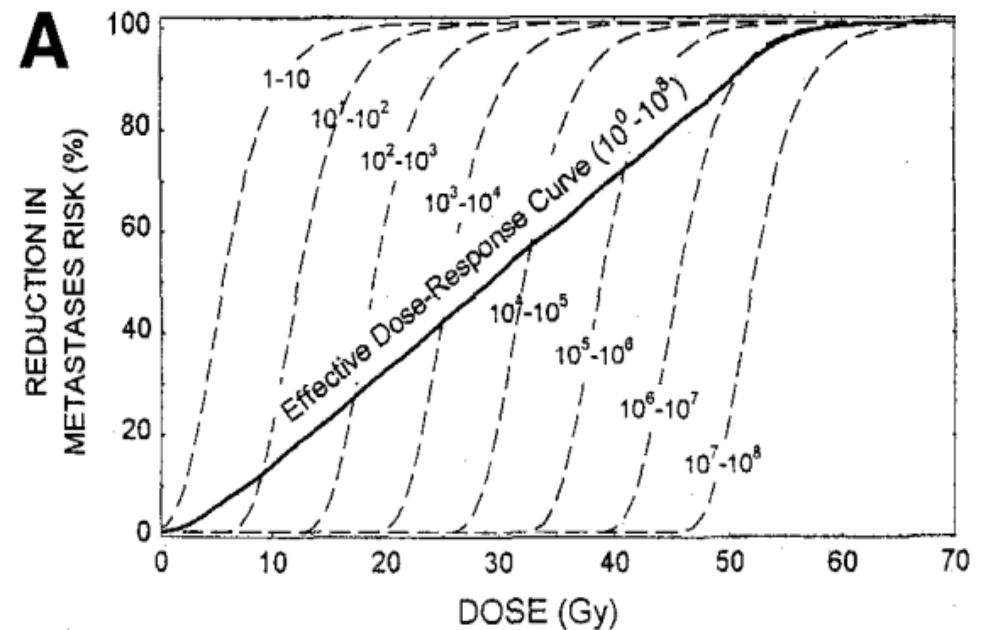


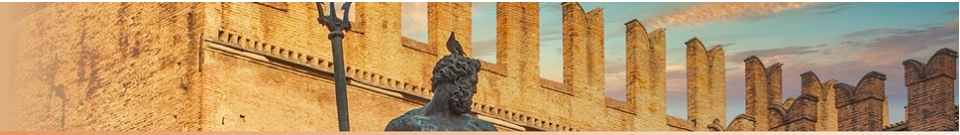
DISCUSSION (2)

Radiation Dose Response for Subclinical Metastases

H. Rodney Withers and Rafal Suwinski

...in the light of more and more effective and targeted systemic therapy, it cannot be excluded that doses considered nontumoricidal can actually exert such an effect on microscopic disease...





CONCLUSION

Incidental dose to L1 was in the range observed in comparable to other similar studies including high tangential fields, but..

great variability, depending on several factors, anatomic and technical...

Different patients' set-up might impact on the unintended dose to L1

Overall, the incidental dose to L1 (Dmean up to 45 Gy) with IMRT technique was not negligible and might have an impact on local control and arm edema



Grazie per l'attenzione!!

