NEOADJUVANT CHEMORADIOTHERAPY AS AN IMPROVED PROGNOSTIC OVER RECTAL CANCER PATIENTS. A 2-DECADE STUDY AND ITS CHARACTERIZATION

Sara Müller[1,2], Pedro Berenguer[1,2], Cláudia Fraga[1,2], Patrícia Serrão[1,2], Mariana Rodrigues[2,3], Rubina Teixeira[4], José Camacho[1,2], Carolina Camacho[1,2,*]

[1] Registo Oncológico da Região Autónoma da Madeira, Registo Oncológico Nacional – RORAM, RON, 9004-514 Funchal, Portugal
[2] Serviço de Saúde da Região Autónoma da Madeira – SESARAM, E.P.E., 9004-514 Funchal, Portugal
[3] Gabinete de Apoio à Investigação e Estatística, SESARAM, E.P.E., 9004-514 Funchal, Portugal
[4] Joaquim Chaves Saúde, Clínica de Radioncologia da Madeira, 9000-238, Funchal, Portugal
[*] E-mail: carolina.camacho@sesaram.pt

Objectives
Rectal cancer (RC) is the 5th most 5-year prevalent cancer, affecting more than 2 million people worldwide. Its incidence and mortality are expected to increase, for at least 50%, over the next 2 decades especially in the most developed countries. The multimodal strategy for locally advanced RC with neoadjuvant chemoradiotherapy (nCRT) resulted in a decrease of local recurrence after surgical resection and increased overall survival. Preoperative radiotherapy also demonstrated better radiation sensitivity and toxicity profile. The combination of chemotherapy with fluoropyrimidine increased the rate of tumor response and local control, without advantage in overall survival. This study was designed to investigate the impact of nCRT on the outcomes of RC patients from the Autonomous Region of Madeira (RAM), Portugal.

Methods
Data were collected from patients with RC diagnosis (ICD-O-3:C20.9) between 2000 and 2019, registered in the *Registo Oncológico da RAM* (RORAM) platform. Survival curves were calculated using the *Kaplan-Meier* estimates.

Results
A total of 801 (56.6% males) RC cases, with a median age of 67 years, were registered on RORAM. RC average annual incidence rate (/100,000 population) increased 28.9%, from 13.9 (2000-2009; PI) to 17.9 (2010-2019; PII). Regarding morphology, adenocarcinoma (M8140/3) accounted 87.8% of cases. Clinical stage group II and III were the most frequent with 459 cases and stage group III was the most frequent performing nCRT (74.7%) with an increase from 59.6% (PI) to 79.8% (PII). When performing nCRT, it was observed an overall increase on the survival rate: 59.7% to 74.0% for stage group II and 40.0% to 67.7% for stage group III for the 5-year time of survival ($p<0.01$). PII has shown a significant ($p=0.015$) increase in the survival rate compared to PI in the homologous times of survival.

Conclusions
The results from this study suggest that nCRT has an important prognostic role over locally advanced RC. As expected and described in literature, survival rates have increased significantly over the years in the identified RC cases that performed multimodal strategy in the preoperative setting.

Preference
Poster presentation

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[2]Serviço de Saúde da Região Autónoma da Madeira – SESARAM, E.P.E., 9004-514, Funchal, Portugal
[3]Gabinete de Apoio à Investigação e Estatística, SESARAM, E.P.E., 9004-514, Funchal, Portugal
[4]Joaquim Chaves Saúde, Clínica de Radioncologia da Madeira, 9000-238, Funchal, Portugal

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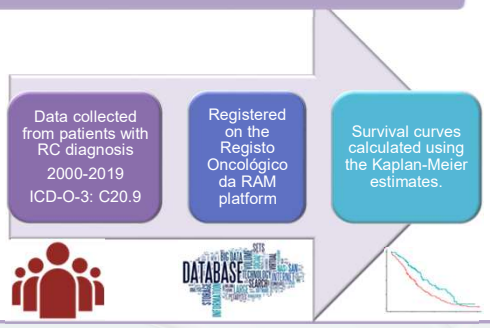
INTRODUCTION

- Rectal cancer (RC) is the fifth most prevalent cancer (5-year survival rate), affecting more than 2 million people worldwide.
- Its incidence and mortality are expected to increase 52.6% and 65.6% respectively until 2040 especially in the most developed countries (Globocan 2020) due to their Western lifestyle (i.e., increased meat consumption and obesity as a risk factor).
- The multimodal strategy for locally advanced RC with neoadjuvant chemoradiotherapy (nCRT) resulted in a decrease of local recurrence after surgical resection and increased overall survival. Preoperative radiotherapy also demonstrated better radiation sensitivity and toxicity profile. The combination of chemotherapy with fluoropyrimidine increased the rate of tumor response and local control, without advantage in overall survival.
- With this work, it is intended to evaluate the impact of nCRT on the prognostic of RC in patients from the Autonomous Region of Madeira (RAM), Portugal. The beginning of radiotherapy on the region in 2009 is also knowledge.

METHODOLOGY



DISCUSSION/CONCLUSION

- Early diagnosis is one of the most important factors for a better prognosis because early stages have greater overall survival.
- nCRT has an important prognostic role over locally advanced RC.
- Survival rates have increased significantly over the years In the identified RC cases that performed multimodal strategy in the preoperative setting.
- Data suggest that implementation of radiotherapy treatment in 2009 on RAM is a valuable asset to patients and their health care.

RESULTS

A total of 801 participants were registered and included, 56.6% were male, with a median age of 67 years. RC average annual incidence rate (/100,000 population) increased 28.9% from the Period I to Period II. RC average annual incidence rate (/100,000 population) increased 28.9% from the Period I to Period II. A total of 459 cases with clinical stage group II and III were registered. When performing nCRT, it was observed an overall increase on the survival rate: 59.7% to 74.0% for stage group II and 40.0% to 67.7% for stage group III for the 5-year time of survival (p<0.01).

CHARACTERIZATION OF THE RC CASES REGISTERED ON THE RORAM PLATFORM BETWEEN 2000-2019

Criteria	Period I and II (2000-2019)	Period I (2000-2009)	Period II (2010-2019)
Age Group (Total:Male:Female)			
20-29	1:0:1	1:0:1	0:0:0
30-39	17:7:10	9:4:5	8:3:5
40-49	62:36:26	29:15:14	33:21:12
50-59	157:98:59	59:34:25	98:64:34
60-69	216:140:76	89:54:35	127:86:41
70-79	212:103:109	99:45:54	113:58:55
80+	136:69:67	59:34:25	77:35:42
Total	801:453:348	345:186:159	456:267:189
Incidence rate (/100,000)	15.9:19.2:13	13.9:15.9:12.1	17.9:22.5:13.9
Status			
Dead	453 (56.6%)	258 (74.8%)	195 (42.8%)
Alive	348 (43.4%)	87 (25.2%)	261 (57.2%)
KRAS mutation			
Mutated:not mutated: unknown:not evaluated	82:105:160:454	8:9:101:227	74:96:59:227
Stage at presentation			
Local or locoregional	602 (75.2%)	249 (72.2%)	353 (77.4%)
Metastatic	160 (20%)	62 (18%)	98 (21.5%)
Unknown	39 (4.9%)	34 (9.9%)	5 (1.1%)
Morphology			
Adenocarcinoma, NOS (M8140/3)	703 (87.8%)	297 (86.1%)	406 (89%)
Malignant neoplasm (M8000/3)	36 (4.5%)	23 (6.7%)	13 (2.9%)
Intestinal type adenocarcinoma (C16._; M8144/3)	21 (2.6%)	6 (1.7%)	15 (3.3%)
Other (M___/3)	41 (5.1%)	19 (5.5%)	22 (4.8%)
Clinical stage group			
I	136 (17%)	82 (23.8%)	54 (11.8%)
II	145 (18.1%)	67 (19.4%)	78 (17.1%)
III	314 (39.2%)	94 (27.2%)	220 (48.2%)
IV	160 (20%)	62 (18%)	98 (21.5%)
Unknown	46 (5.7%)	40 (11.6%)	6 (1.3%)
Antitumor therapy			
With	686 (85.6%)	284 (82.3%)	402 (88.2%)
Without	115 (14.4%)	61 (17.7%)	54 (11.8%)
Neoadjuvant CRT			
With	225 (28.1%)	57 (16.5%)	168 (36.8%)
Without	576 (71.9%)	288 (83.5%)	288 (63.2%)
Neoadjuvant CRT by clinical stage group			
I	7 (3.1%)	7 (12.3%)	0 (0%)
II	35 (15.6%)	8 (14%)	27 (16.1%)
III	168 (74.7%)	34 (59.6%)	134 (79.8%)
IV	13 (5.8%)	6 (10.5%)	7 (4.2%)
Unknown	2 (0.9%)	2 (3.5%)	0 (0%)
State after treatment			
In remission:progression: persistence:unknown: not applicable	456:7:212:29:97	167:0:102:25:51	289:7:110:4:46

SURVIVAL RATES ACCORDING TO THE STUDIED PARAMETERS THROUGH PERIOD I (2000-2009) AND PERIOD II (2010-2019)

Criteria	Survival rates		
	1-year	3-year	5-year
Overall			
Period I and II	77.4%	56.9%	47.4%
Period I	73.0%	52.5%	42.9%
Period II	80.2%	60.6%	51.6%
By stage group			
Period I and II			
I	85.9%	71.7%	65.0%
II	89.6%	78.9%	63.4%
III	86.6%	66.4%	55.1%
IV	50.9%	14.6%	11.2%
Unknown	37.0%	23.9%	16.7%
Period I			
I	86.6%	70.7%	64.6%
II	91.0%	80.6%	61.2%
III	76.6%	54.3%	43.6%
IV	51.6%	12.9%	9.7%
Unknown	40.0%	25.0%	17.5%
Period II			
I	84.9%	75.0%	65.8%
II	88.2%	77.3%	69.3%
III	91.0%	72.3%	60.7%
IV	50.4%	15.8%	12.7%
Unknown	16.7%	-	-
By nCRT			
Period I and II			
Without	70.2%	46.7%	39.1%
Stage group II	86.2%	74.3%	59.7%
Stage group III	78.1%	47.5%	40,0%
With	95.4%	82.9%	68.2%
Stage group II	100,0%	93.5%	74,0%
Stage group III	93.8%	82.4%	67.7%
By Stage group II and III			
Period I	82.6%	65.2%	50.9%
Period II	90.3%	73.6%	62.7%
Period I			
Without nCRT	81.0%	62.1%	50.6%
With nCRT	92.7%	85.0%	66.6%
Period II			
Without nCRT	84.8%	65.6%	53.4%
With nCRT	96.9%	86.0%	71.5%

SURVIVAL CURVES FOR CLINICAL STAGE II AND III (KAPLAN-MEIER ESTIMATES)