

# DOES DIAGNOSTIC MRI BEFORE RADIOTHERAPY FOR PROSTATE CANCER CAUSE A WILL ROGERS PHENOMENON ?

Johanna Dahan<sup>1</sup>; Guila Delouya<sup>1,2</sup>; Carole Lambert<sup>1,2</sup>; Damien A.R. Olivié<sup>3</sup>; Jean-Sébastien Billiard<sup>3</sup>; Daniel Taussky<sup>1,2</sup>

Department of Radiation-Oncology<sup>1</sup> and Radiology<sup>2</sup> Centre Hospitalier de l'Université de Montréal (CHUM)

## INTRODUCTION

Pre-treatment diagnostic **multiparametric magnetic resonance imaging** (mpMRI) is used in prostate cancer detection and staging

- Many studies have shown high sensitivity, but low specificity in identifying high risk zone of clinically significant lesions.

However, little is known about the **influence of mpMRI on treatment decision** and **prognosis** in radiotherapy or brachytherapy

## OUTCOMES OF INTEREST

**Primary** :Analysis of prevalence of known **factors of aggressiveness** on mpMRI among patients treated with radiotherapy or brachytherapy

- *PIRADS-Score, Index lesion diameter, extracapsular extension, or seminal vesicle invasion*

**Secondary**: Analysis of **prognostic significance** of MRI to predict for biochemical recurrence

- *Low-dose rate (LDR) brachytherapy, External Beam Radiotherapy (EBRT) with or without a high-dose rate (HDR) boost*



Link to full article !

## METHODS

A retrospective study conducted on a **prospective maintained database**

- Inclusion criteria : All patients treated between January 2014 and June 2022 by LDR-brachytherapy or with EBRT ± HDR brachytherapy

- Exclusion criteria : Diagnostic mpMRI completed > 12 months prior to treatment initiation

- Other Variable of Interest : **CAPRA Score, MRI lesion diameter and capsule contact**

## RESULTS

Table I Distribution of Size of PIRADS Lesion 4 and 5 According to Treatment Received (in %)

	MRI Size ≥ 15 mm	P=	MRI Size ≥ 20 mm	P=	PIRADS 4/5	P=
<b>LDR monoth.</b>	18.1	p<0.01	5.4	p<0.01	75.8	p<0.01
<b>HDR-boost</b>	54.7		32.6		93.7	
<b>EBRT monoth.</b>	43.7		31		91.5	

Table II Distribution of Relationship With Prostate Capsule According to Treatment Received (in %)

	OC	P=	ECE	P=	SVI	P=	Conta ct caps	P=
<b>LDR monoth.</b>	58.4	0.012	2.7	=0.01	0	p<0.01	25.5	0.055
<b>HDR-boost</b>	38.9		15.8		12.6		40	
<b>EBRT monoth.</b>	52.1		9.9		1.4		33.8	

We further investigated the prevalence of larger lesions (≥15 mm and ≥20 mm) in patients presenting with CAPRA ≤3 and ≤5 as these are considered a grey-zone for choosing the optimal treatment

Table III Distribution of Aggressive MRI Features According to CAPRA Score (in %).

	MRI Size ≥ 15 mm	P=	MRI Size ≥ 20 mm	P=	PIRADS 4/5	P= *
<b>CAPRA ≤ 3</b>	22	P < 0.01	9.3	p < 0.01	80.2	0.011
<b>CAPRA &gt; 3</b>	52.6		33.1		91	

Patients with a CAPRA ≤3: **22% a PIRADS 4/5 ≥15 mm and 9.3% ≥20 mm**

Table IV Exploratory Analysis of Impact of Different Factors on MRI on Recurrence in Univariate Analysis .

Factor	P=
Having had MRI	0.354
PIRADS grade (contin 2-5)	0.048
MRI Size ≥ 15 mm	0.021
<b>MRI Size ≥ 20 mm</b>	<b>p&lt;0.01</b>
CAPRA grouped	p<0.01

## CONCLUSIONS

More than 20% of patients with a low CAPRA ≤3 surprisingly presented on MRI large PIRADS 4 and 5 lesions of ≥15 mm

An MRI could potentially affect treatment choice, and although exploratory our results suggest an important prognostic potential at large