



CASE STUDY: Patient With Complicated Outcome After SBRT For Brain Oligo-Metastasis:

Discussion Of The Radiomics Approach

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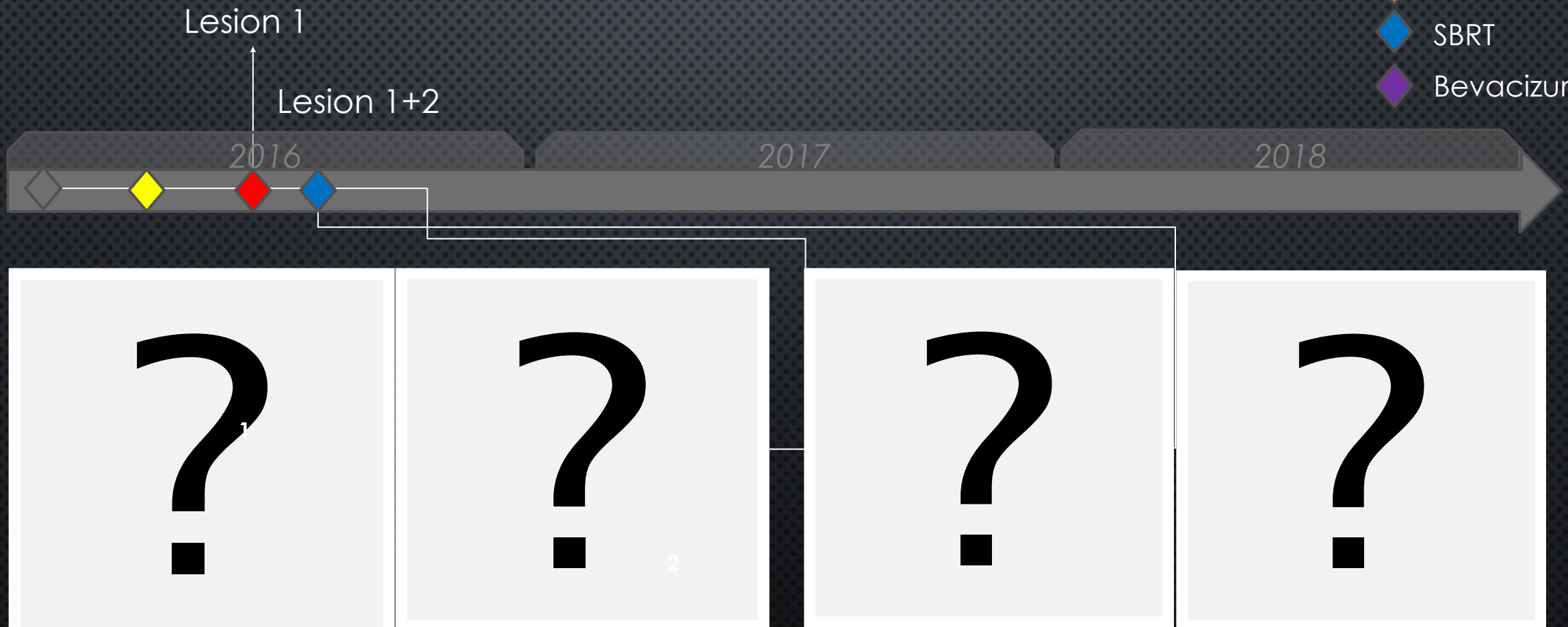
CLINICAL VIGNETTE

- W
- HISTORY OF GRADE 3 YPT3N0M0 IDC OF R. BREAST IDC (HR+, HER-2 ++++) → NEOADJ. CT / LUMPECTOMY / RT (24 Y.O.)
- 2ND GRADE 2 IDC OF L. BREAST (HR-, HER-2 +++) → CT / BILATERAL RADICAL MASTECTOMY (CR) / HERCEPTIN (36 Y.O.)
- 2016 (37 Y.O.): HEADHEACHES → 2 BM

HISTORY OF INVESTIGATIONS AND TREATMENTS (1)



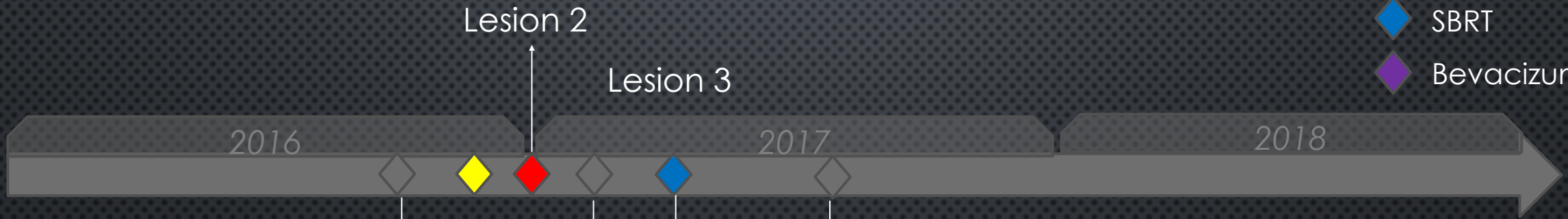
- Red diamond: Surgery
- Yellow diamond: Board
- Blue diamond: SBRT
- Purple diamond: Bevacizumab



HISTORY OF INVESTIGATIONS AND TREATMENTS (2)



- ◆ Surgery
- ◆ Board
- ◆ SBRT
- ◆ Bevacizumab



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NTS (3)

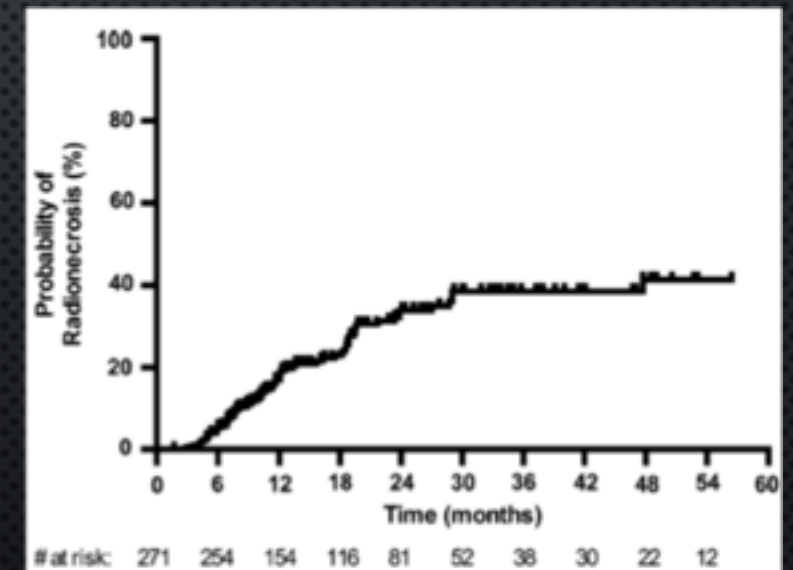


- ◆ Surgery
- ◆ Board
- ◆ SBRT
- ◆ Bevacizumab



PROBLEM IN PRACTICE

HOW TO ADDRESS THE
DIFFERENTIAL DIAGNOSIS
BETWEEN P AND RN?



ANOCEF CRITERIA

Clinical criteria	<ul style="list-style-type: none"> • initial lesion treated with a high-dose RT • delay ≥ 3 months • within the RT fields • no semiologic specificity
Radiological criteria	<p><u>Standard MRI</u></p> <ul style="list-style-type: none"> • persistent central hyposignal and peripheral enlargement of a preexisting enhancement on T1w PC and hypersignal (edema) on T2w "Swiss cheese" or "soap bubble" lesion • ↗ volume of the lesion followed by shrinkage without anticancer treatment on 2 successive examinations <p><u>Advanced MRI</u></p> <ul style="list-style-type: none"> • MR perfusion : ↓↓ perfusion with rCBV <2.0 on DSC perfusion images • MR spectroscopy : ⬆ NAA and Cho with Stable Cr <p><u>Nuclear Imaging</u></p> <ul style="list-style-type: none"> • PET and SPECT → low tracer uptake (^{11}C-MET ++)
Pathological criteria	<ul style="list-style-type: none"> • concomitant presence of tumor cells and necrosis possible in surgical samples • hypocellular zones of necrosis and fibrinous exudates with degenerative or dystrophic changes in the vasculature, telangiectasia, hyaline thickening of vessels, fibrinoid necrosis including intravascular thrombosis. Dystrophic calcifications. • anti-VEGF and HIF-1α IHC expressed in the perinecrotic areas

A RADIOMICS STUDY



Age at SRT	56.6 (27.0-78.2)
Sex	
- Male	10
- Female	10
Diagnosis (histology)	
- Radionecrosis	8
- Recurrence	12
Primary Histology	
- Breast	2
- Renal	1
- Lung	15
- Melanoma	1
- Other	1
# BM	
- Solitary	15
- 2-3	5
Median PTV Volume (cc)	10.67 (1-38.6)
Extra-cerebral metastases	
- Yes	1
- No	19
DS GPA score	
- ≤ 1	0
- 1.5-2.5	2
- ≥ 3	18
BM treatment	
- preliminary surgery	3
- concurrent systemic treatment	2
Radiotherapy modality :	
- SRT alone	9
- SRT after WBRT	9
- SRT + WBRT	2
Interval between SRT and MRI modification (months)	10.5 (1.8 – 36.6)
Interval between SRT and surgery (months)	15.3 (5.9-37.9)



