



CT skeletal survey

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Durie Salmon SS

- Laboratorní vyšetření
- Kostní léze
 - 0
 - 1 – 3
 - >3

Table 1: The Durie-Salmon Staging System for Multiple Myeloma

Stage	Hemoglobin	Calcium	Myeloma Protein	Bone Lesions
I ^a	>10 g/dL	Normal or ≤ 12 g/dL	IgG peak <5 g/dL IgA peak <3 g/dL Bence-Jones protein <4 g/24 h	None or solitary bone plasmacytoma only
II ^b	Not I or III	Not I or III	Not I or III	Not I or III
III ^c	<8.5 g/dL	>12 mg/dL	IgG peak >7 g/dL IgA peak >5 g/dL Bence-Jones protein >12 g/24 h	>3 lytic lesions

^a Stage I must demonstrate all of the criteria.
^b Stage II defined as all patients who do not qualify as Stage I or III.
^c Stage III must demonstrate one or more of the criteria.
 Source: Reference 7.

Durie Salmon PLUS SS

- Reflexe rozšíření 3D metod
 - MR, CT, PET-CT, PET-MR
- a jejich využití v klinickém výzkumu
- <5
- 5-20
- >20

Durie/Salmon PLUS Staging System

Classification	PLUS	New imaging: MRI and/or FDG/PET
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MGUS		All negative
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Stage IA (SMM)		limited disease
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Multiple myeloma		
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Stage IB	5 < focal lesions; mild diffuse disease	
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Stage IIA/B	5-20 focal lesions; moderate diffuse disease	
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Stage IIIA/B	>20 focal lesions; severe diffuse disease	
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A: Serum creatinine <2.0mg/dl

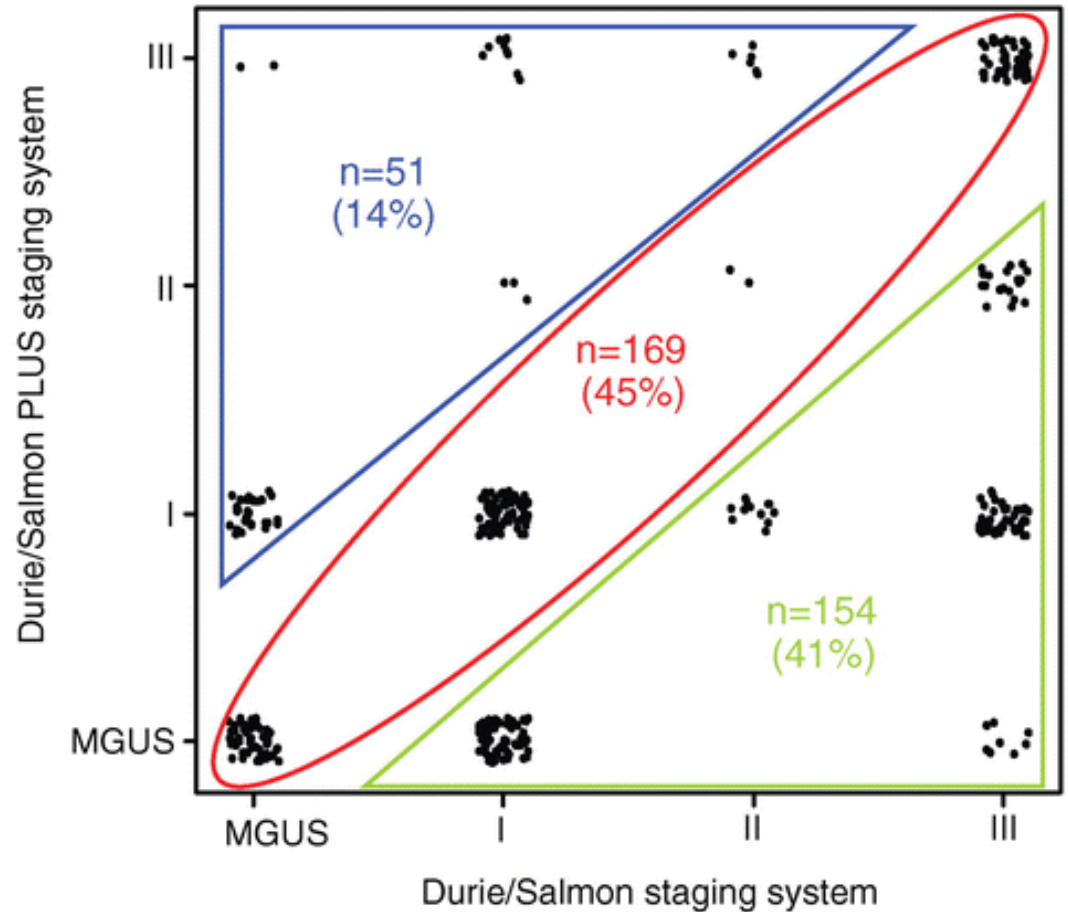
No extramedullary disease

B: Serum creatinine ≥ 2.0 mg/dl

Extramedullary disease

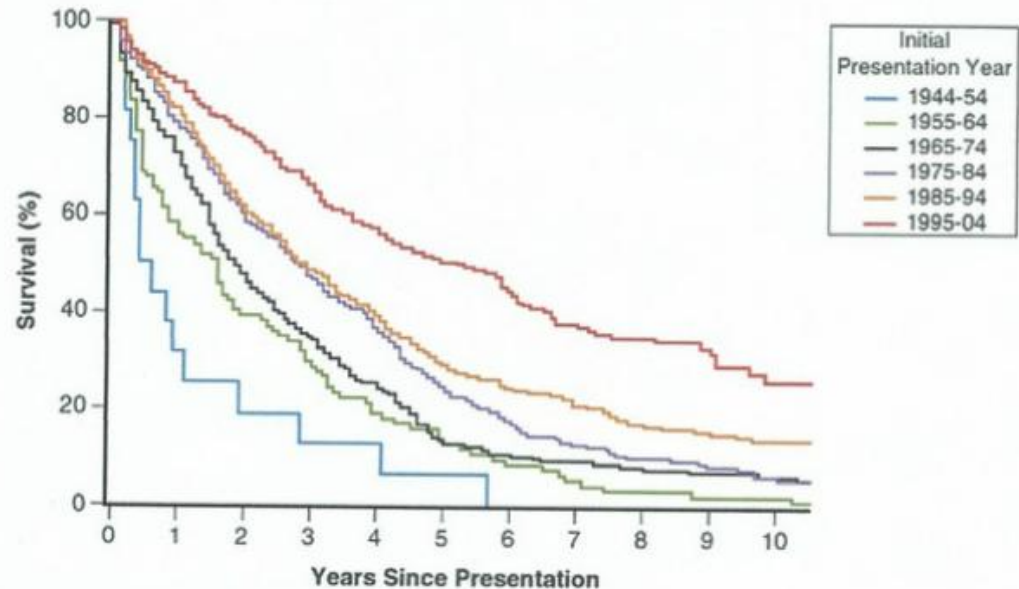
DSPSS

- 15% upstaged
- 41% downstaged



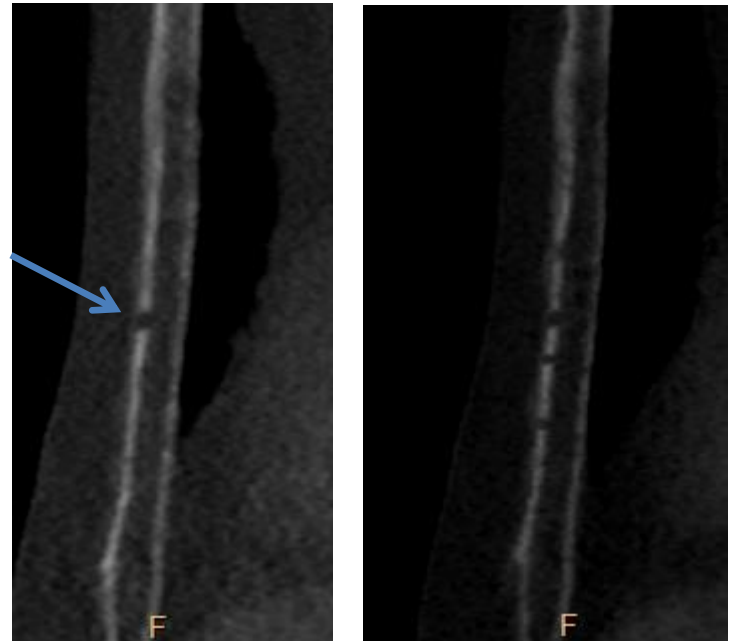
Radiační zátěž

- PET-CT: ~ 20mSv
- CT:
 - Std: ~ 15mSv
 - Low dose: ~ 5mSv
- Life-attributable risk:
 - 1/20Sv
- vs. přežití pacientů
 - MM



Proč lze snížit dávku?

- Hodnocené struktury mají vysoký kontrast
 - Kost: stovky HU
 - Měkká tkáň: desítky HU
 - Tuk: minus desítky HU
- > **kontrastní rozlišení**



Proč lze snížit dávku? - IR

FBP



1 mm

IMR



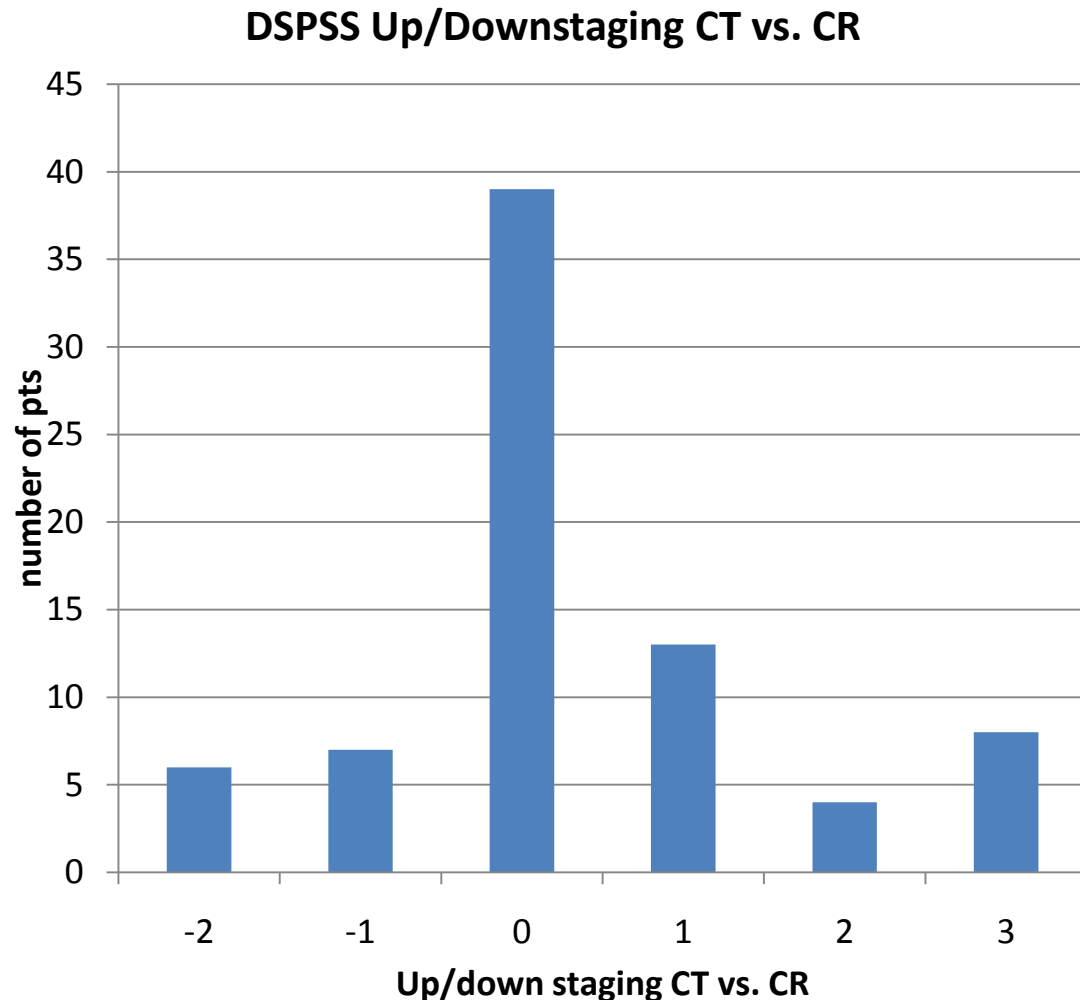
1 mm

Naši pacienti

- 70 pacientů
- staging/restaging
- CT a CR ve stejný den
- Schváleno EK VFN

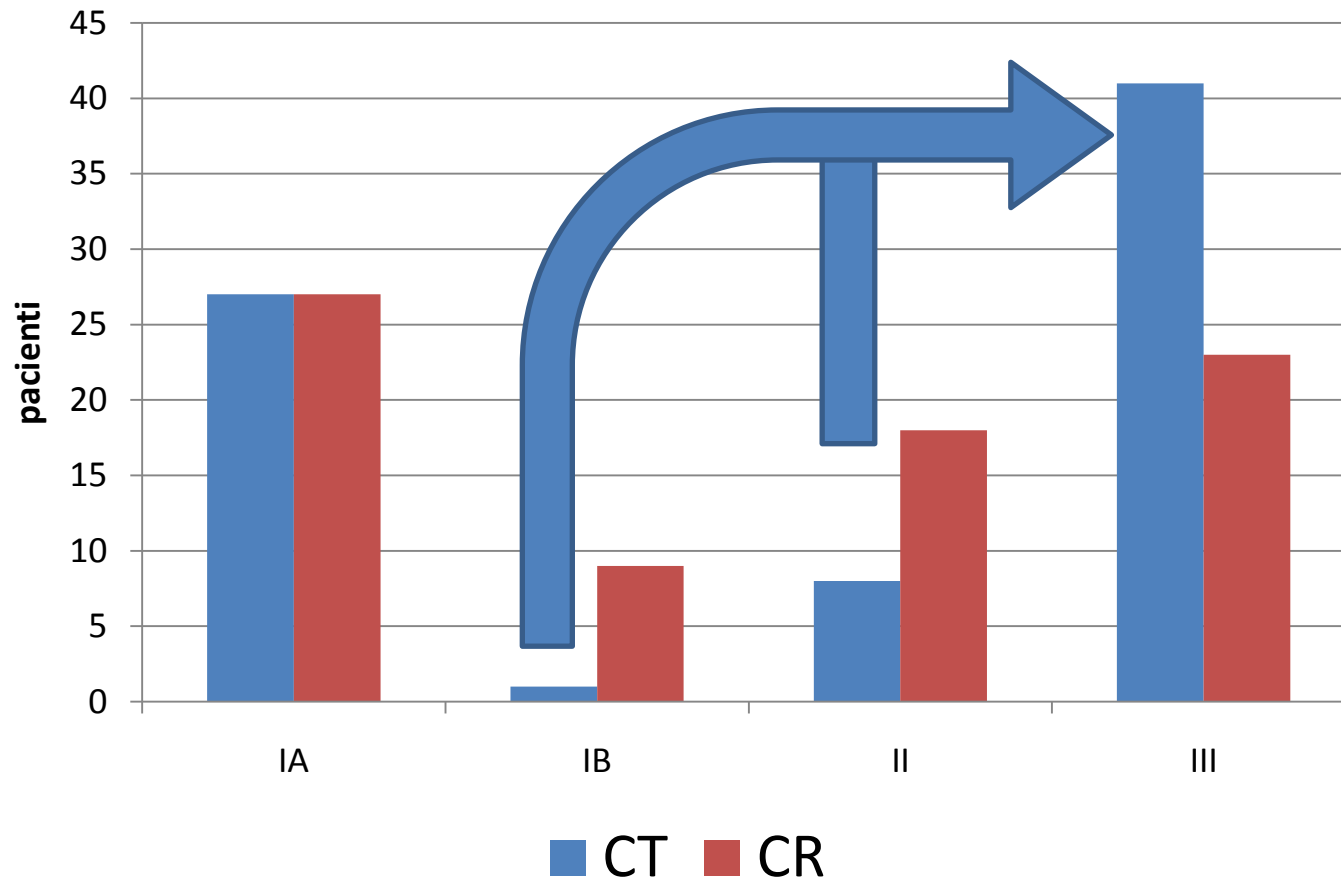
DSPSS up/downstaging CT vs. CR

- CT:
 - 176 oblastí navíc postiženo
 - 87 dalších „řídkých“ lézí v dalších 17 oblastech
 - $P = 0.0335$



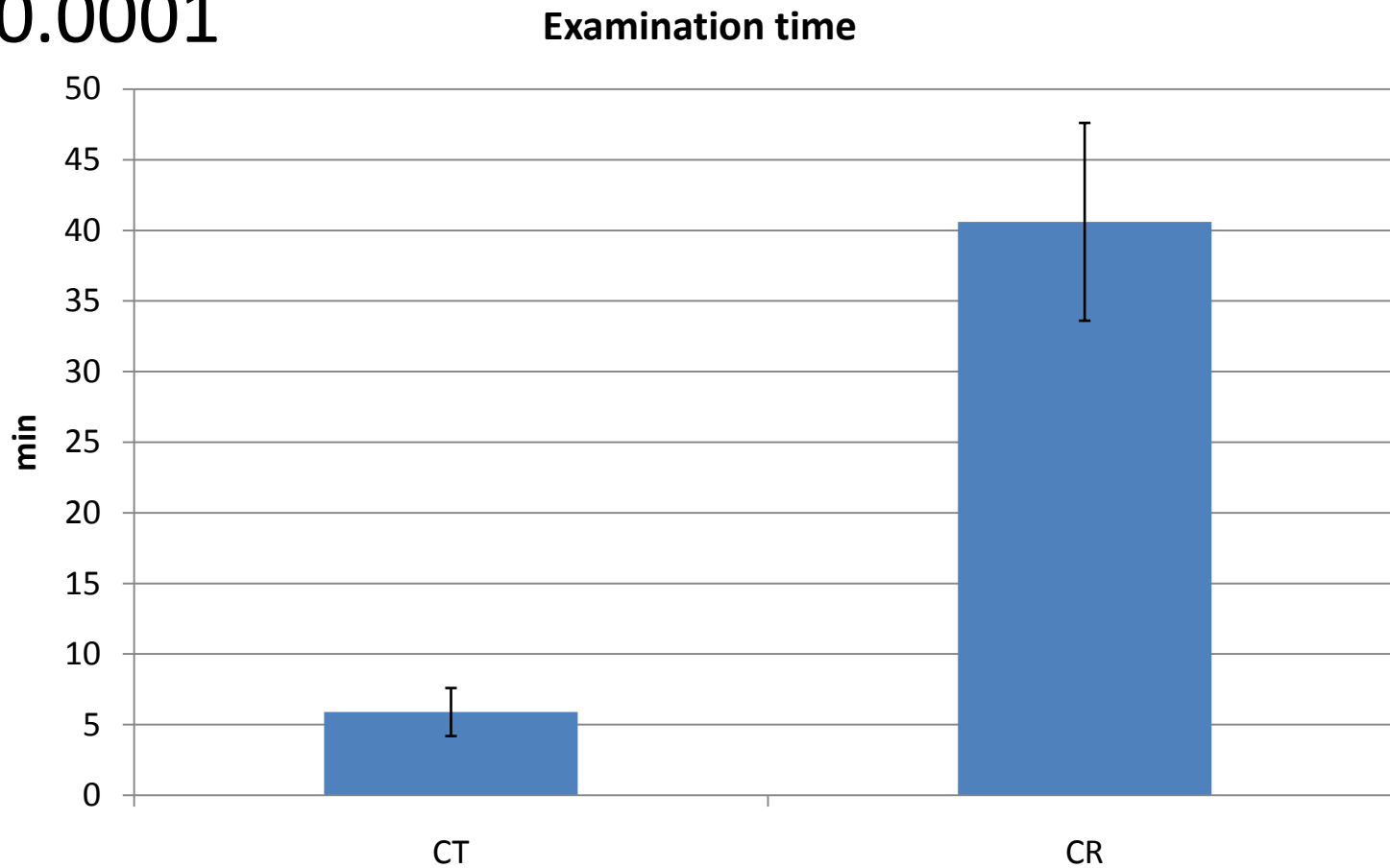
DSPSS

DSPSS



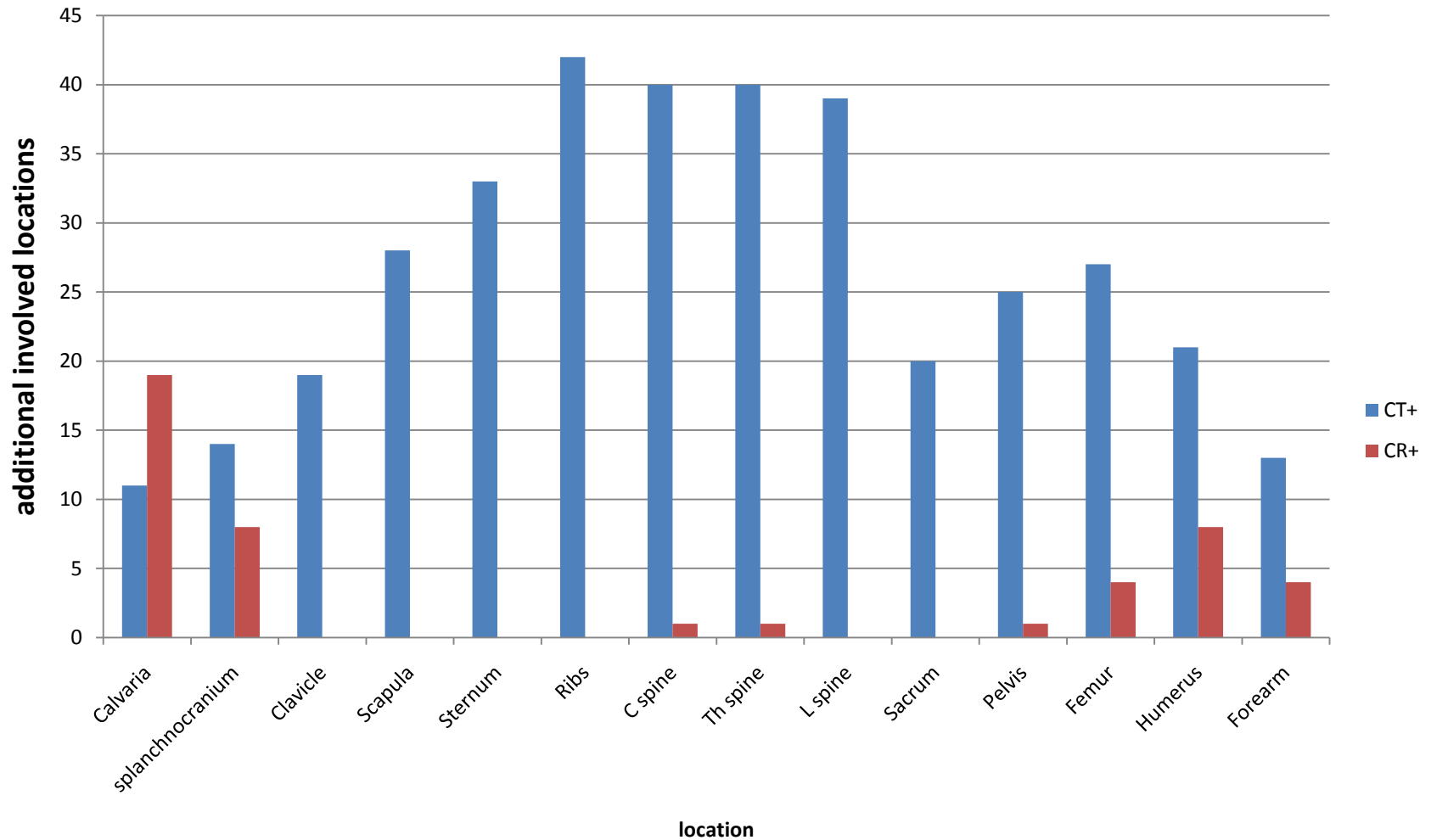
Doba vyšetření

- $p < 0.0001$



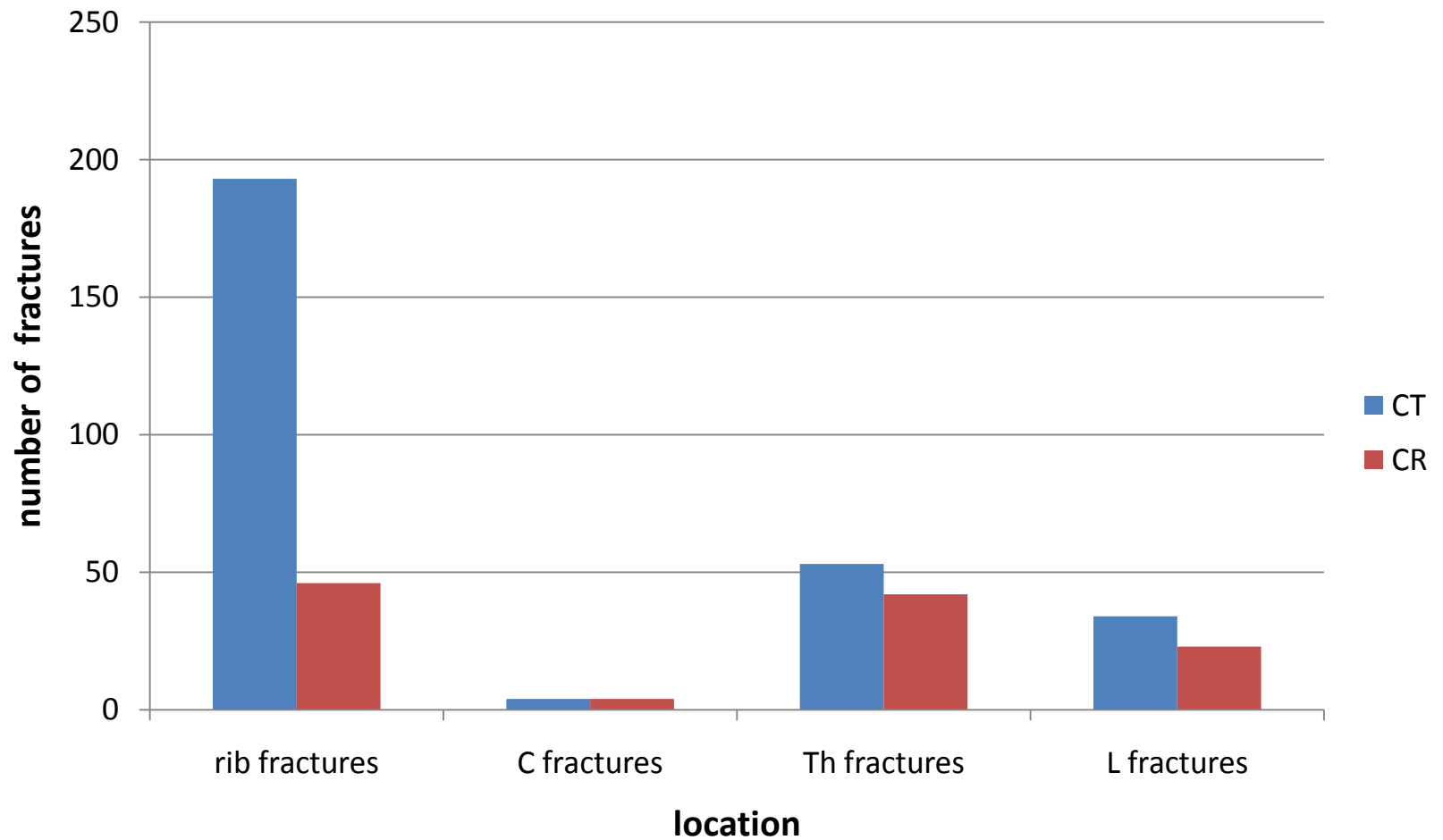
Mismatch CT/CR

Detection mismatch by location



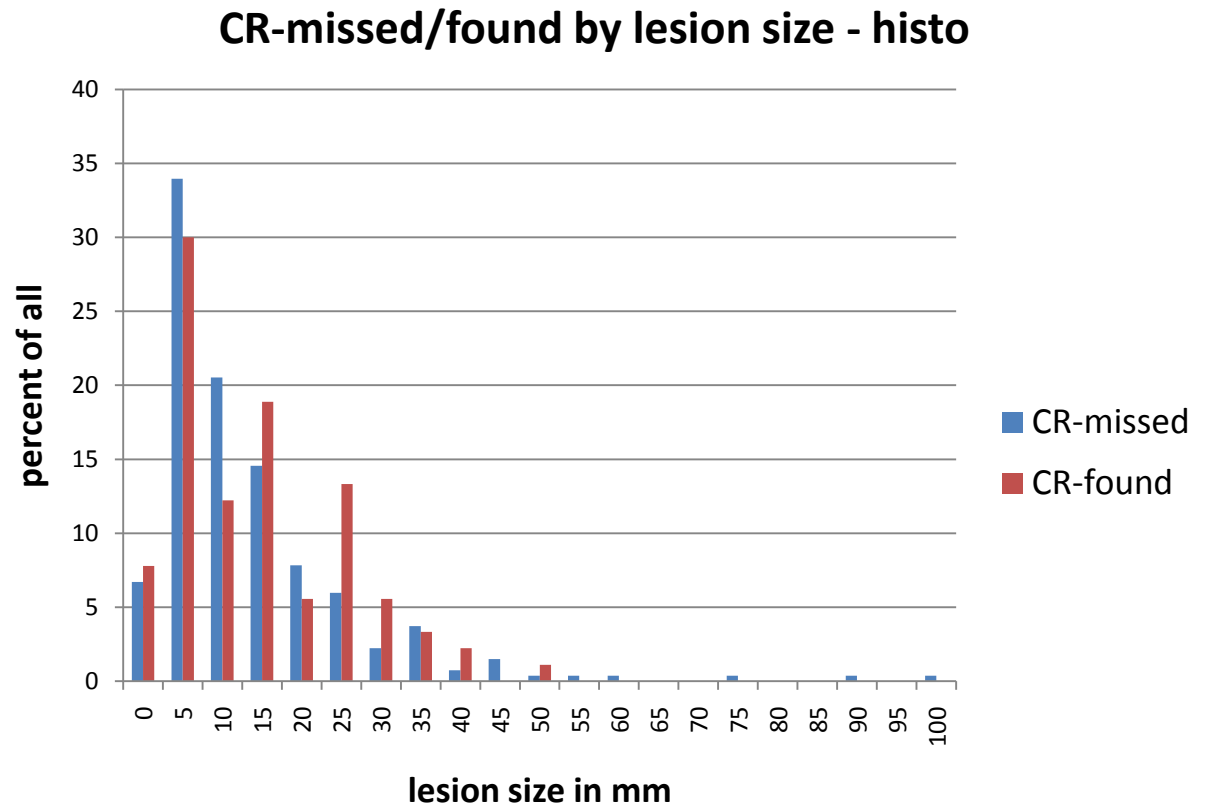
Počet fractur

Number of fractures CT vs CR



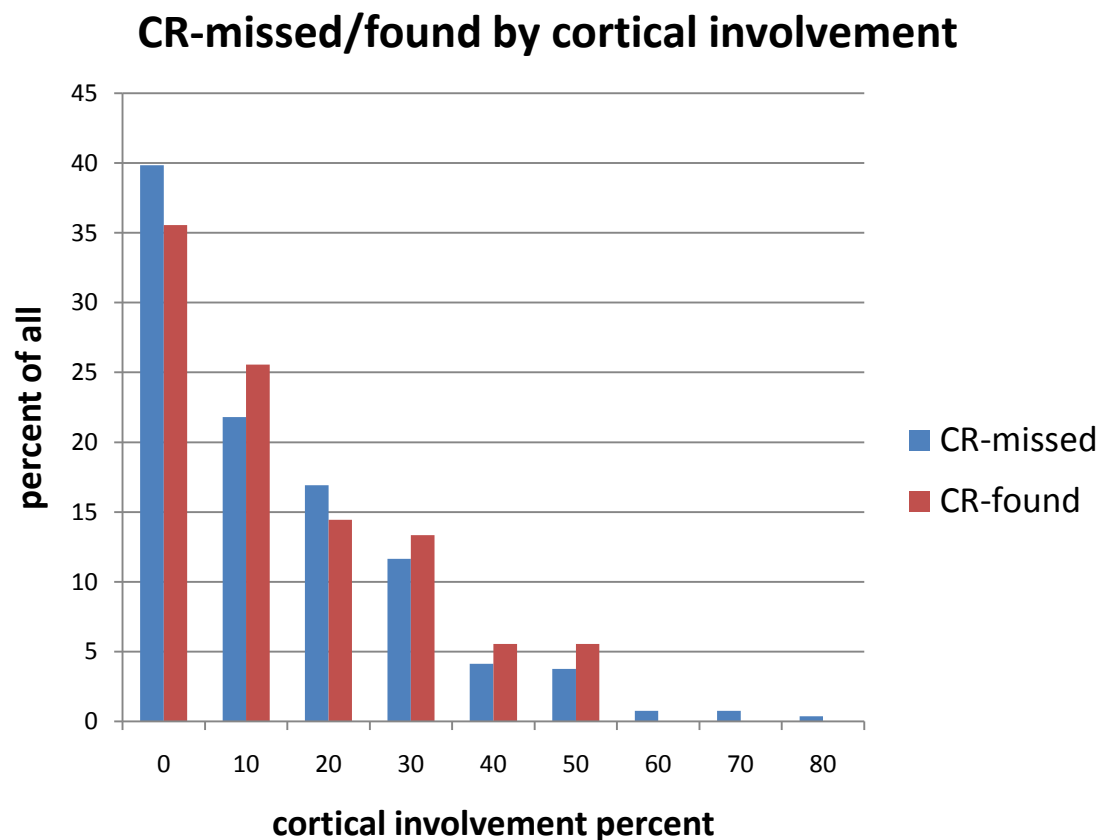
Mismatch vs. velikost lézí

- Léze, které jsme na CR neviděli ale nebyly menší



Mismatch vs. postižení kortiky

- Léze, které jsme na CR neviděli nebyly méně v kortice



Cena

- CT

– 2241CZK

– 82Eur

- CR

– 3981CZK

– 145Eur

mSv

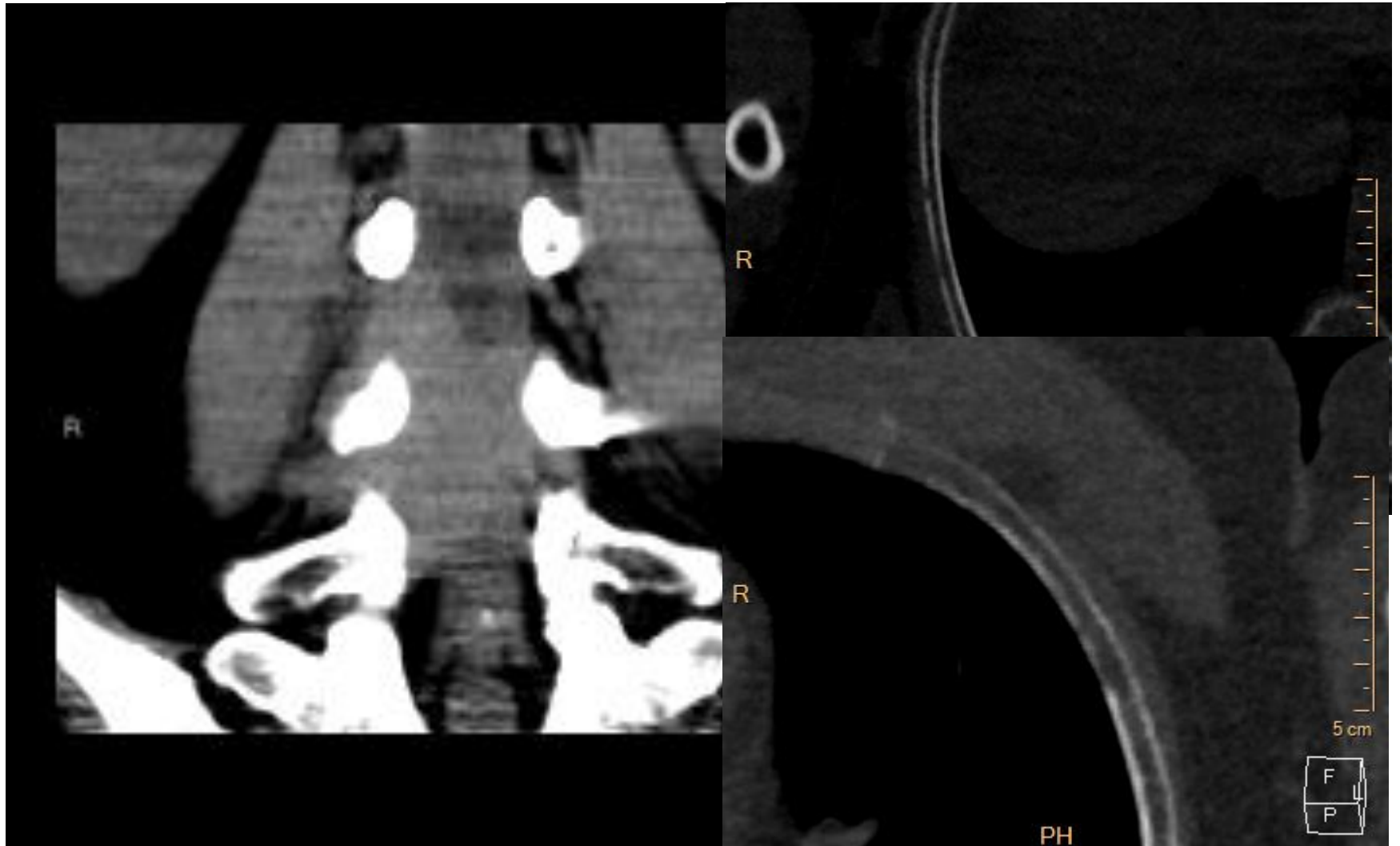
- CT

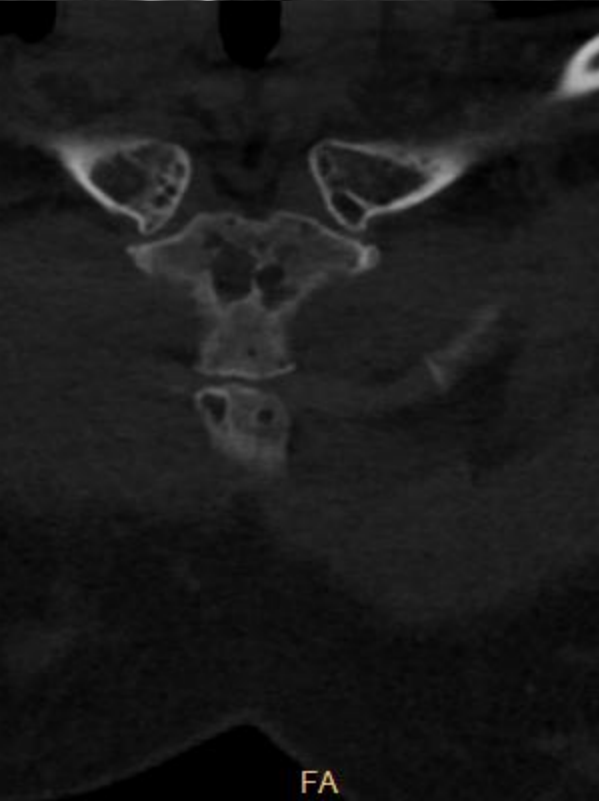
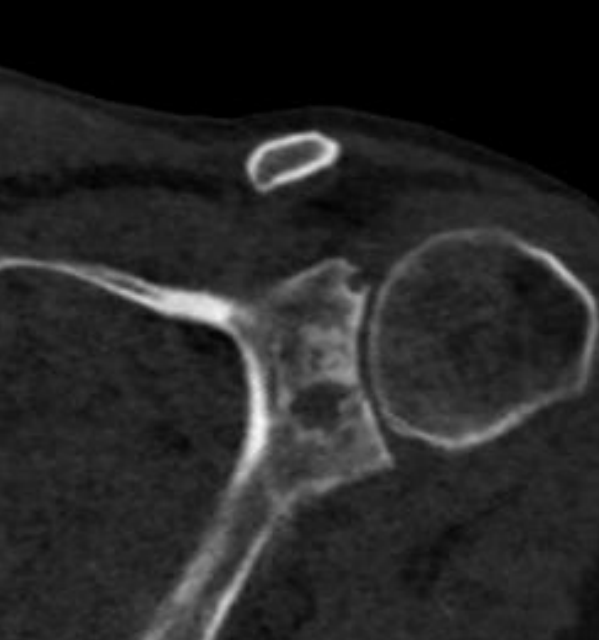
– 2,5 – 3mSv

- CR

– 2 – 2,5mSv

Nález





FA

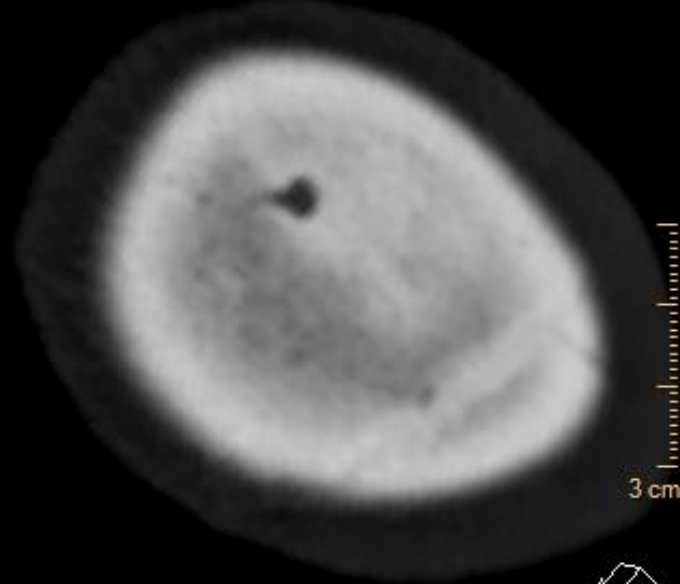


F

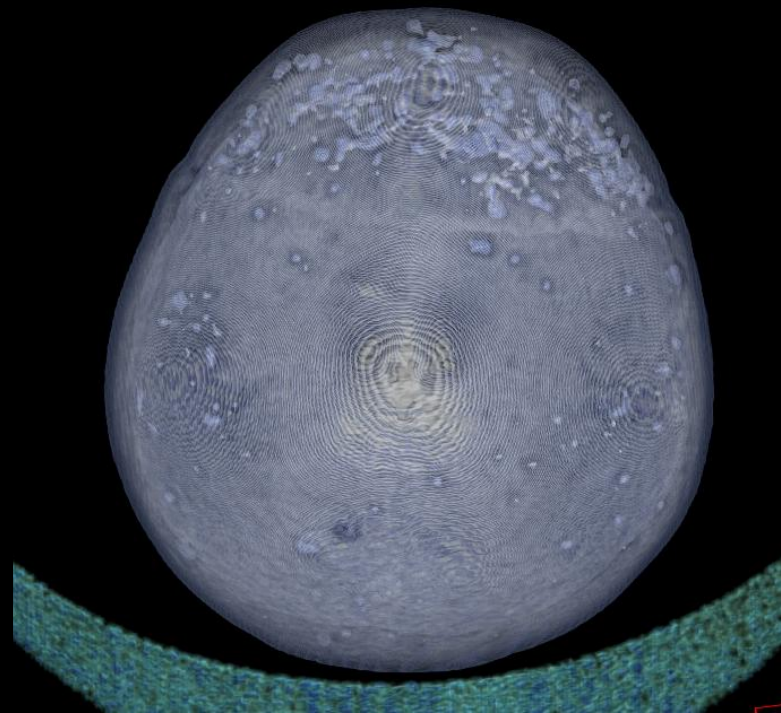
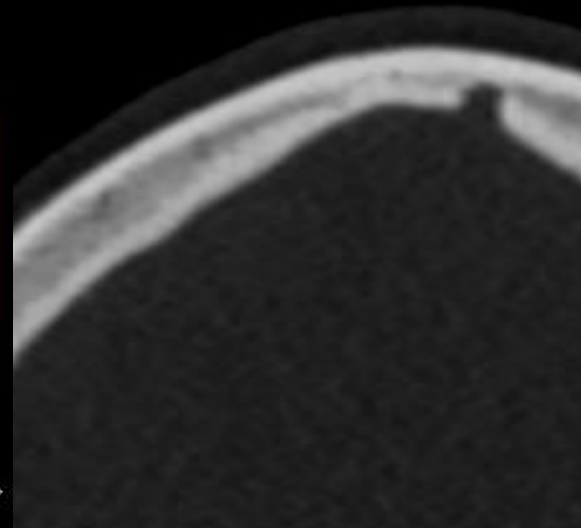
F



AL



3 cm



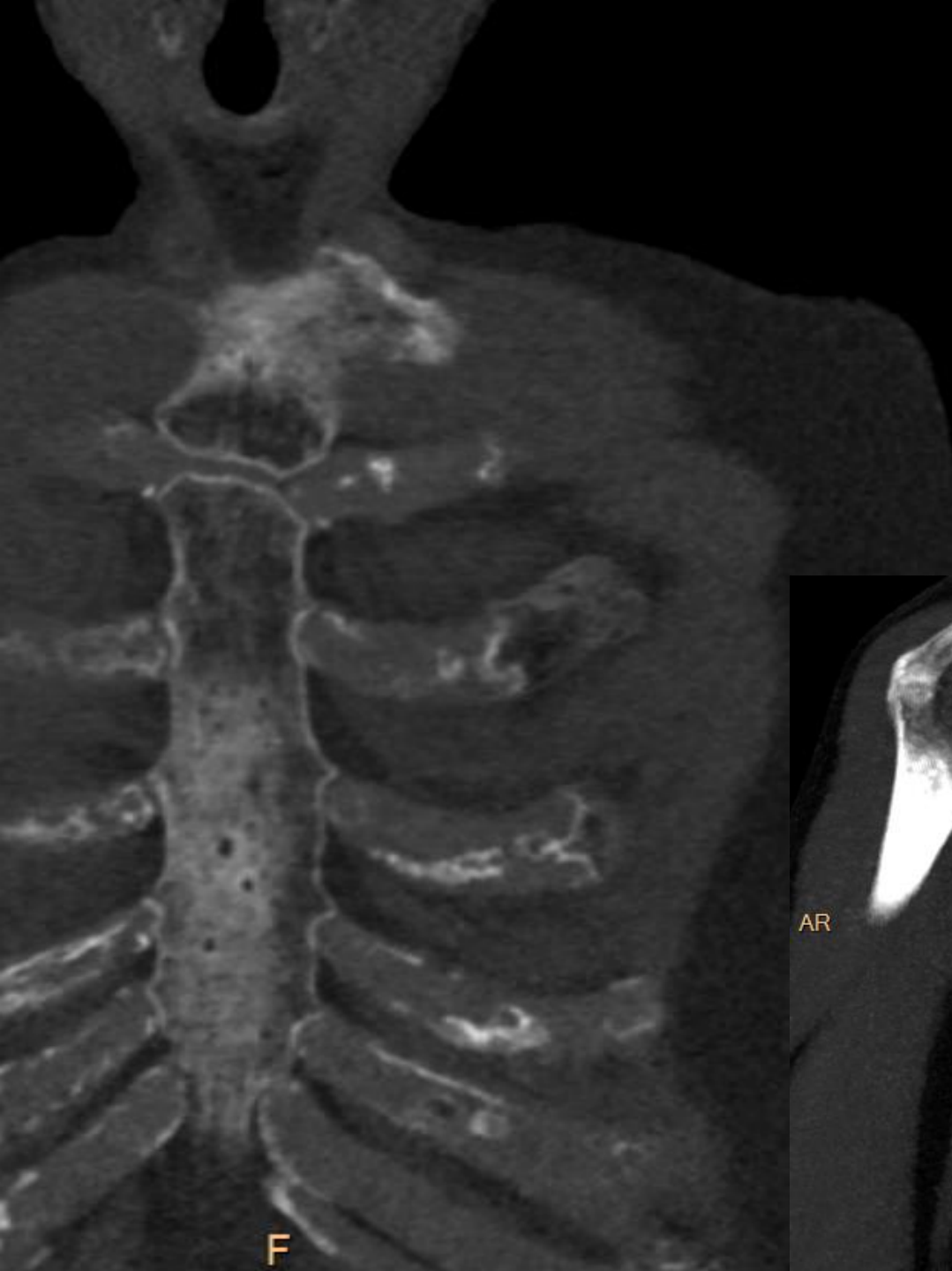
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A

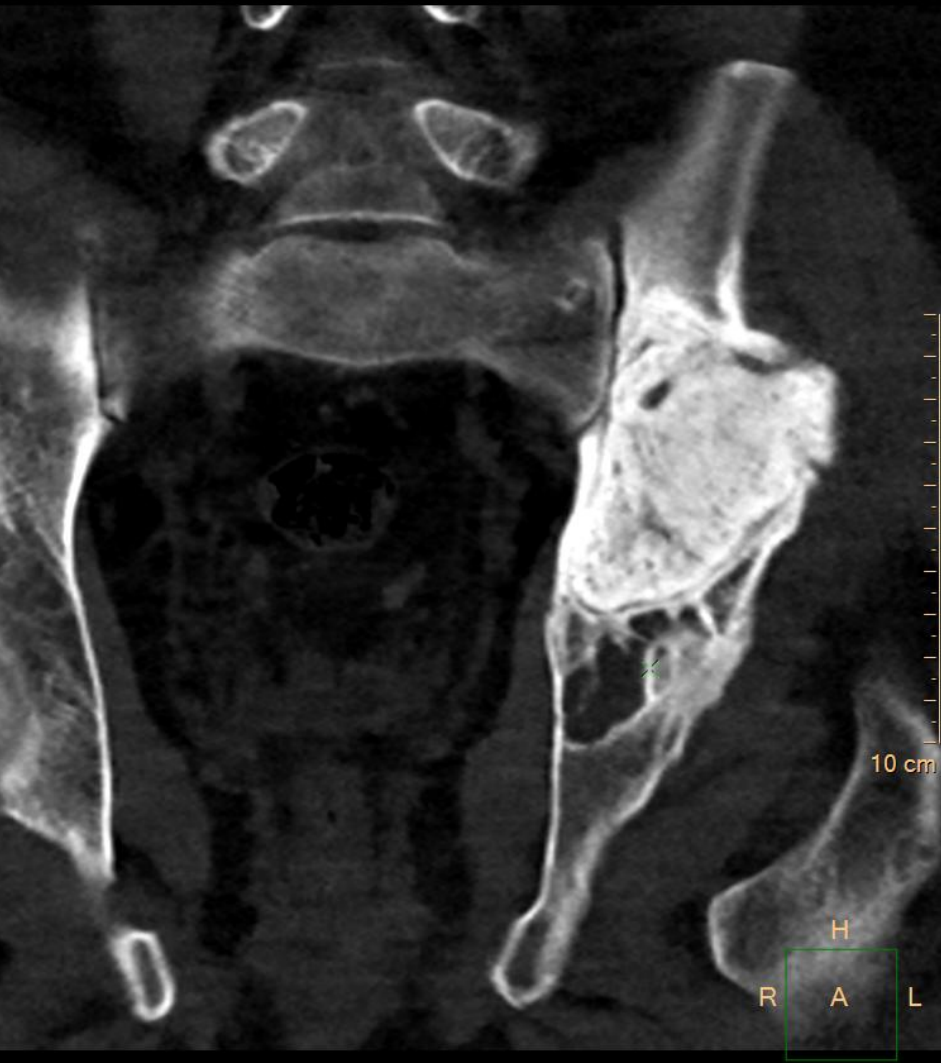
H

B

C



1,5 roku po SCT



Závěr

- Téměř stejná dávka
- CT levnější, rychlejší, vidí více lézí, restaging
- CT vs. RTG: méně pacientů s několika drobnými ložisky
- Teamová spolupráce


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Estimate of spleen volume on CT or MRI, splenic in - calculator

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This formula can be used to estimate volume of the spleen on crosssectional imaging methods by measuring three dimensions - caudocranial (L), maximum size in axial plane (D), and maximum thickness in axial plane (T).

Spleen (ml) = 0.5 x L x D x T

A normal value is considered between 110 and 340mL

Weight [g] = 1.05 x volume