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

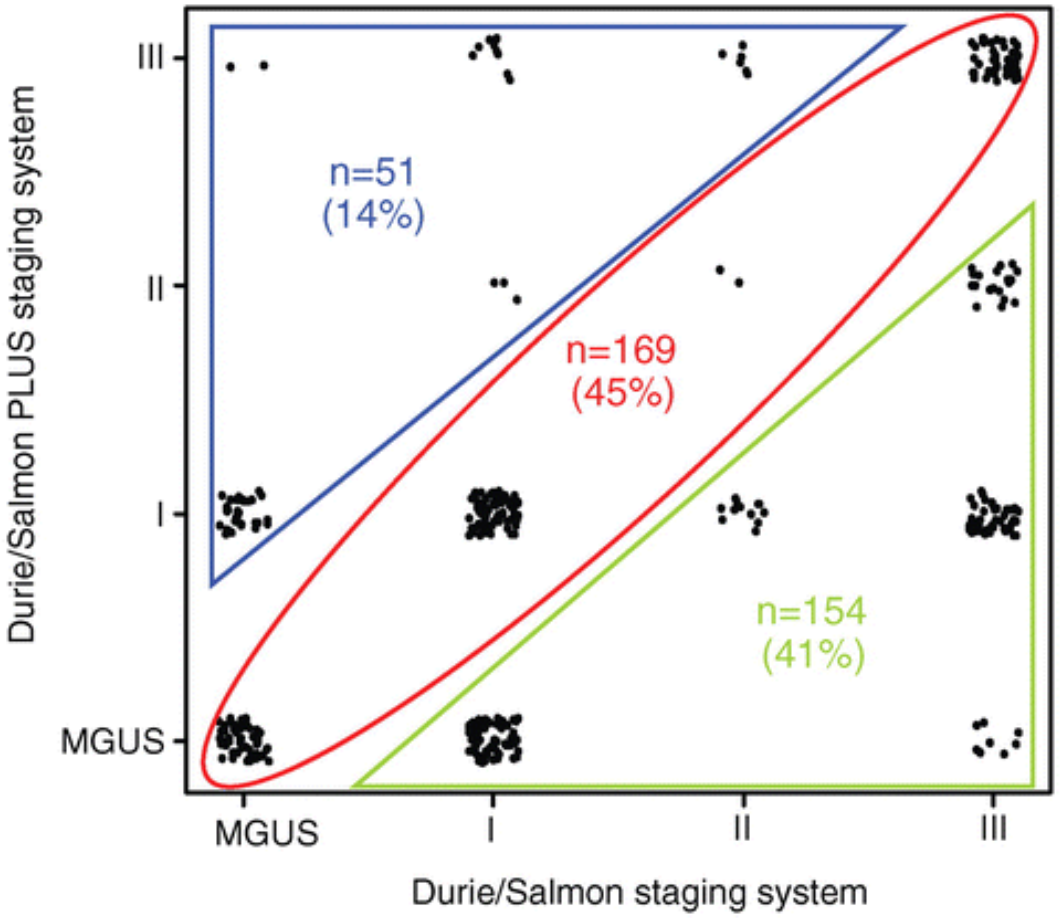
Classification	PLUS	New imaging: MRI and/or FDG/PET
MGUS		All negative
Stage IA (SMM)		limited disease
Multiple myeloma		
Stage IB	5< focal lesions; mild diffuse disease	
Stage IIA/B	5-20 focal lesions; moderate diffuse disease	
Stage IIIA/B	>20 focal lesions; severe diffuse dusease	

A: Serum creatinine <2.0mg/dl
No extramedullary disease
B: Serum creatinine >2.0mg/dl
Extramedullary disease

http://www.hindawi.com/journals/bmr/2011/583439/

DSPSS

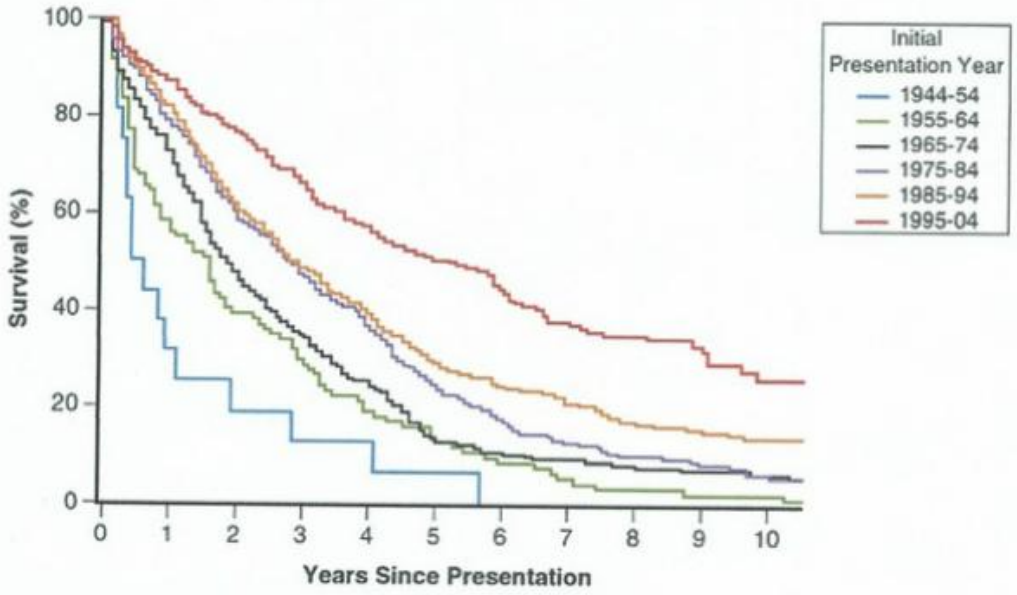
- 15% upstaged
- 41% downstaged



http://pubs.rsna.org/doi/full/10.1148/radiol.10091809

Radiační zátěž

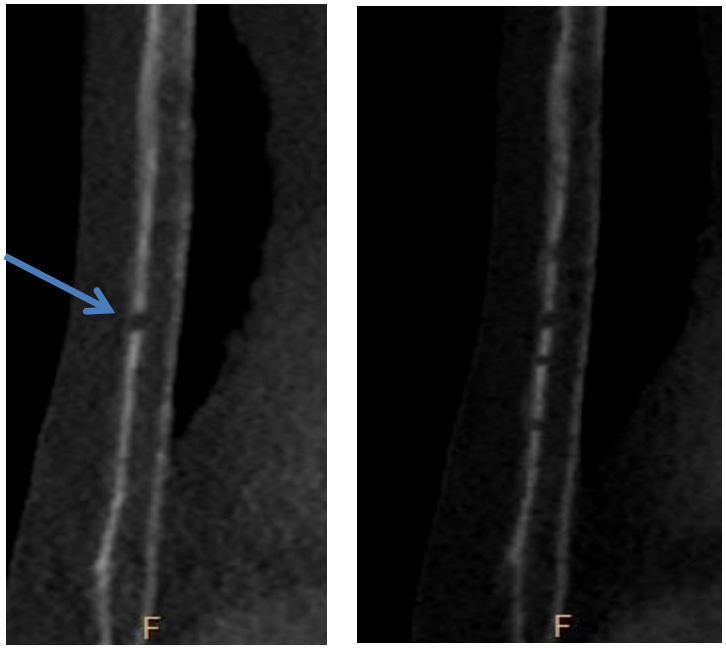
- PET-CT: ~ 20mSv
- CT:
  - Std: ~ 15mSv
  - Low dose: ~ 5mSv
- Life-attributable risk:
  - 1/20Sv
- vs. přežití pacientů
  - MM



http://pubs.rsna.org/doi/abs/10.1148/radiol.2511081300
http://www.myelomasurvival.com/1/archives/11-2013/1.html

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

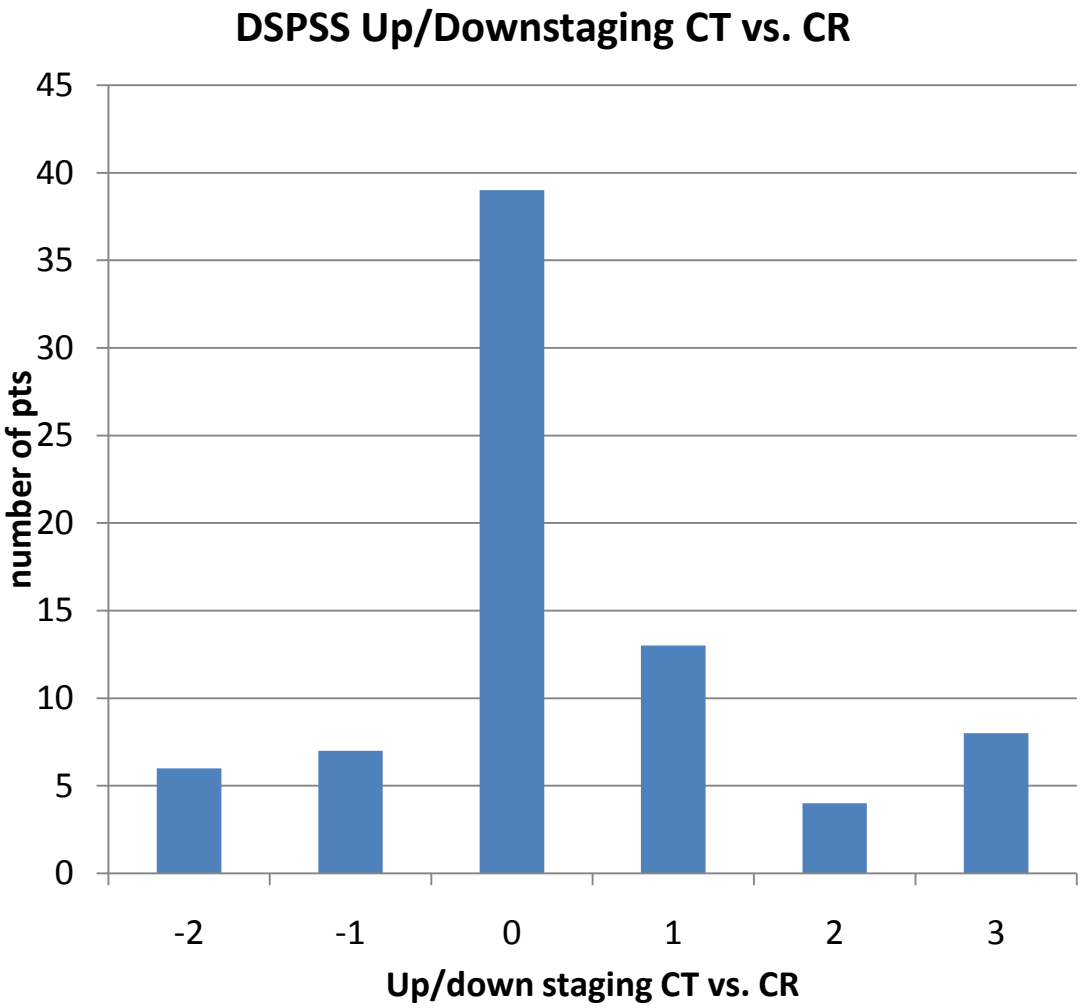
1 mm

Naši pacienti

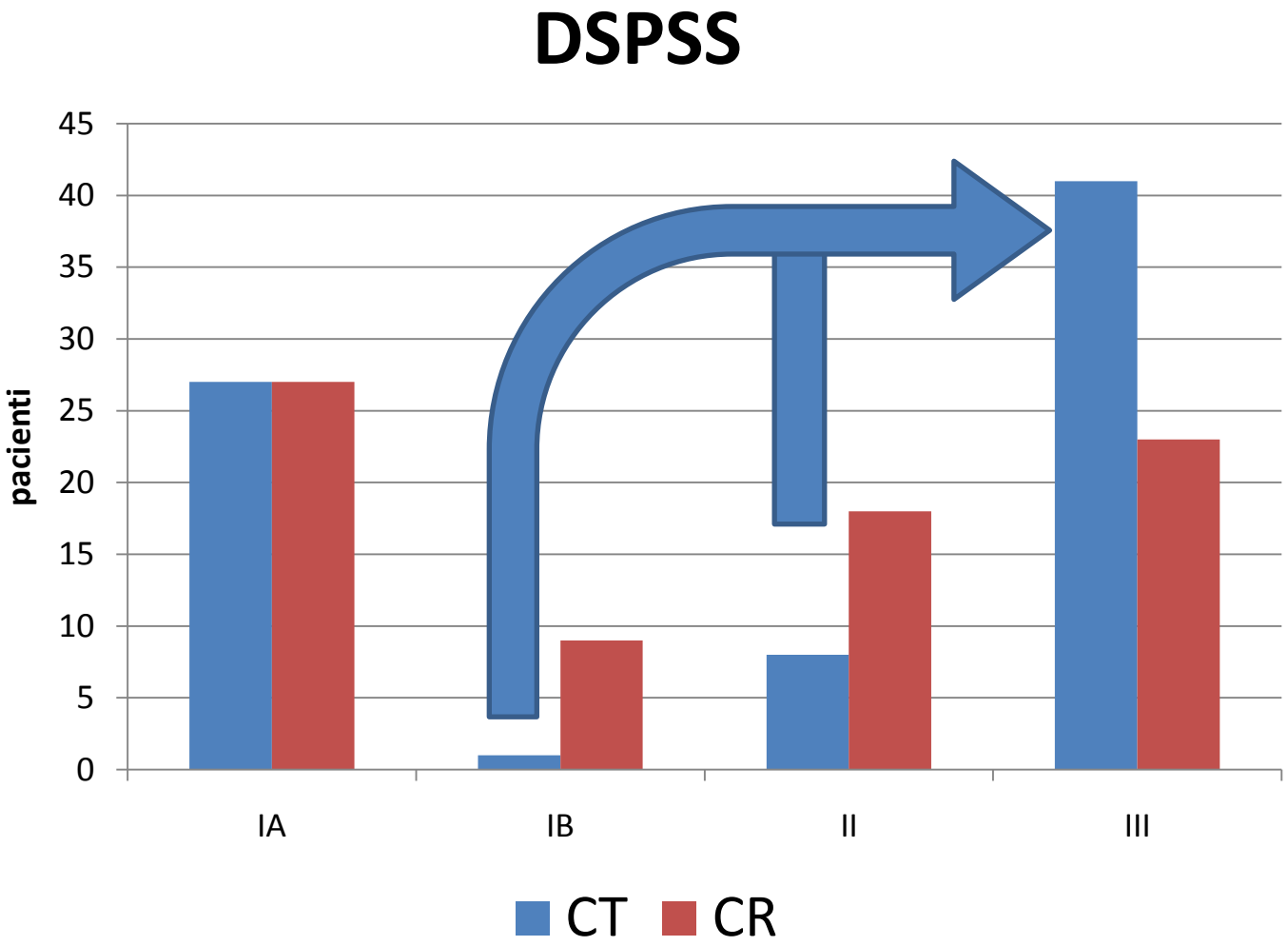
- 70 pacientů
- staging/restaging
- CT a CR ve stejný den
- Schváleno EK VFN

DSPSS up/downstaging CT vs. CR

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

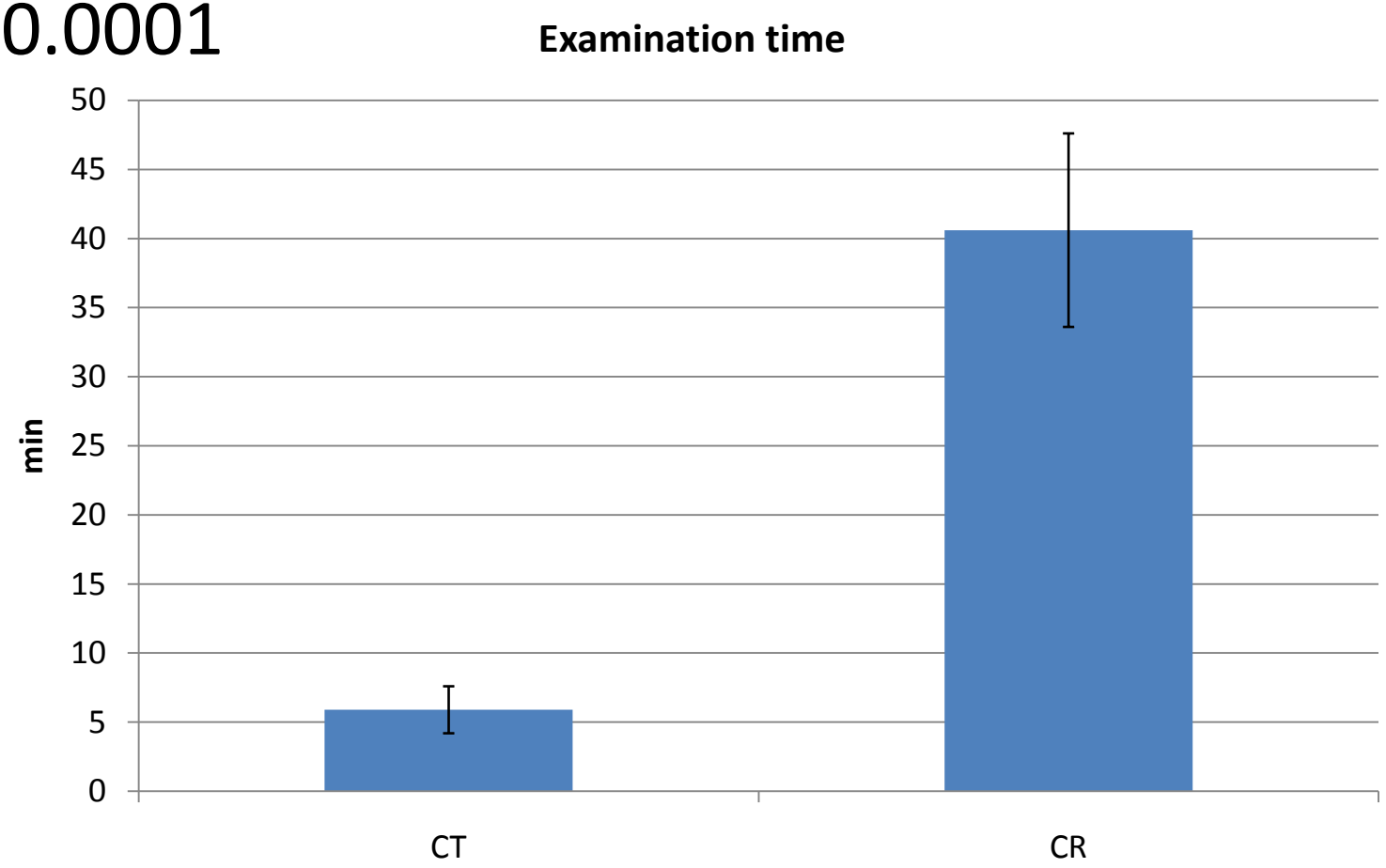


DSPSS

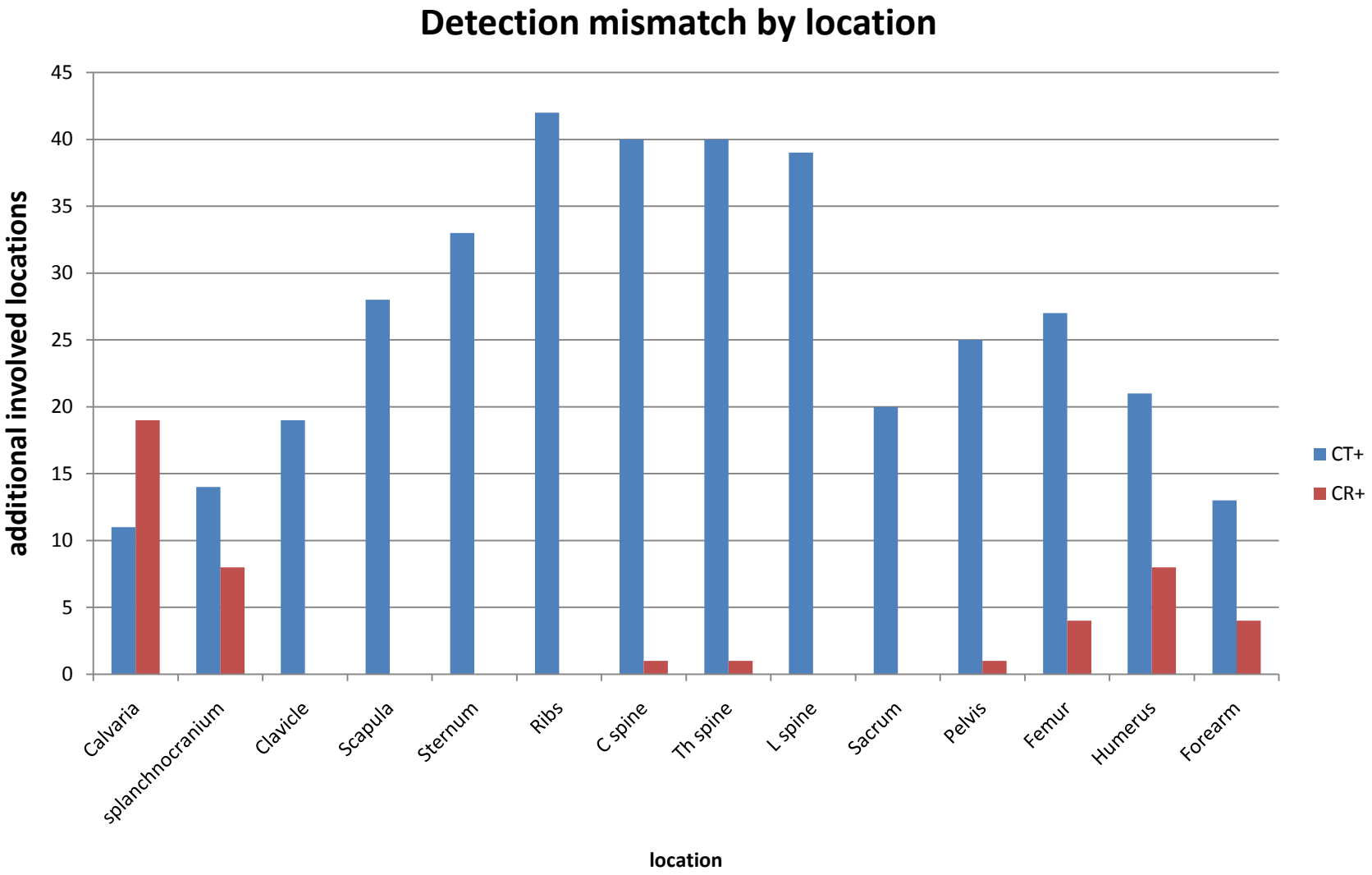


Doba vyšetření

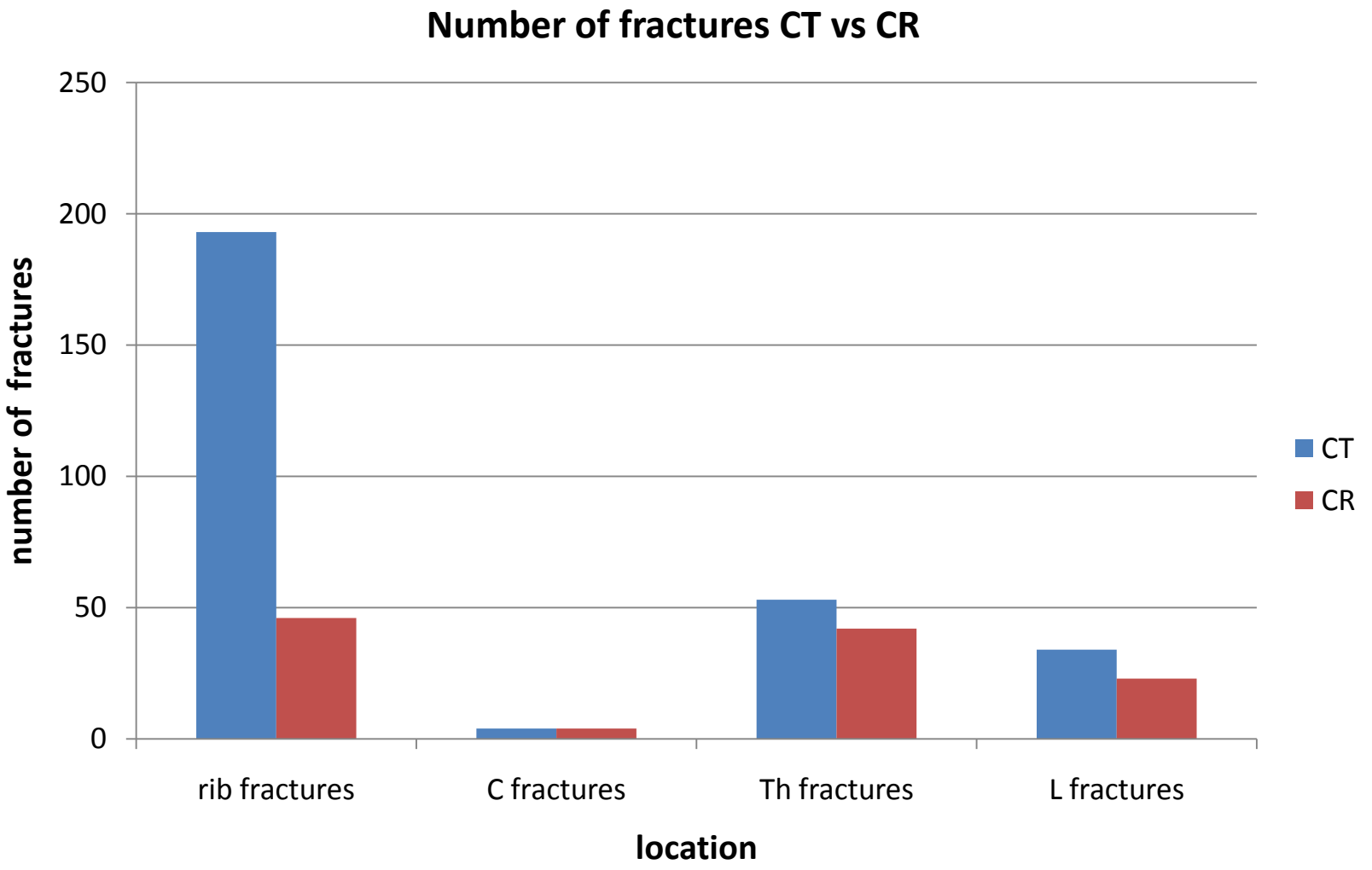
- p< 0.0001



Mismatch CT/CR

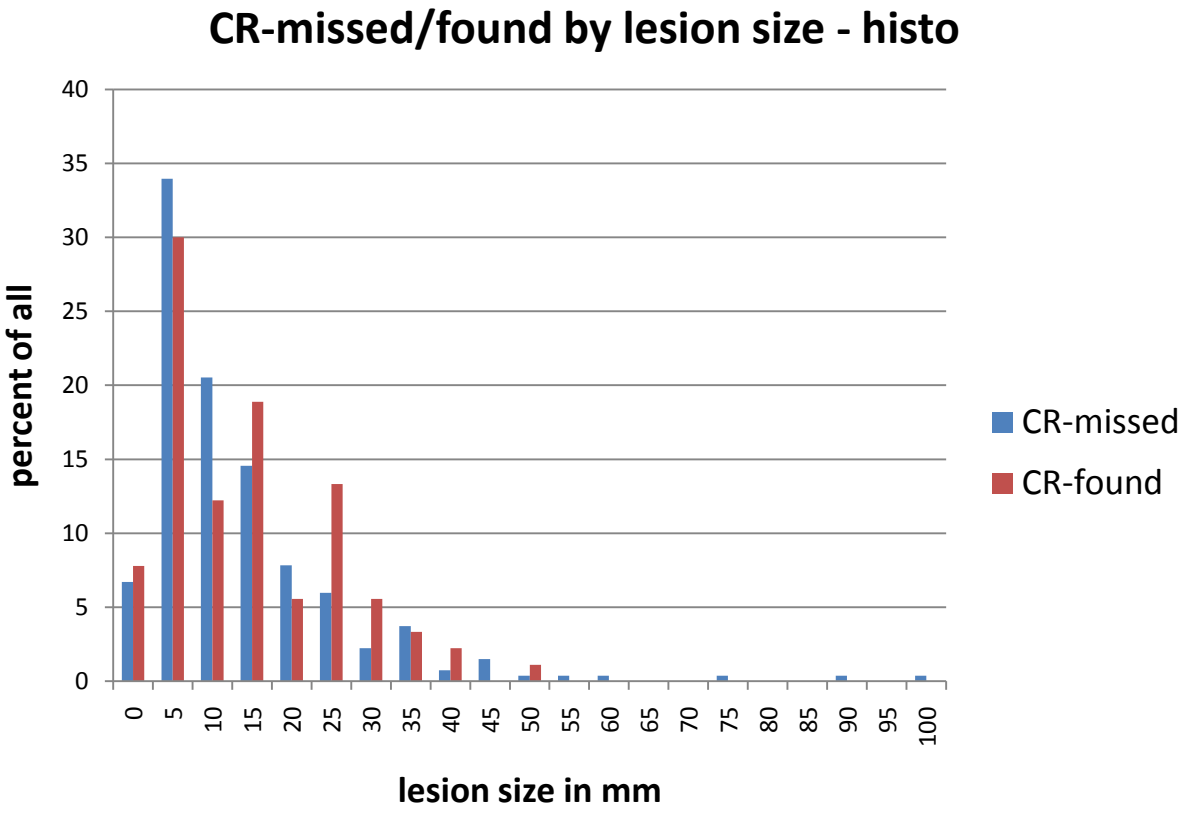


Počet fractur



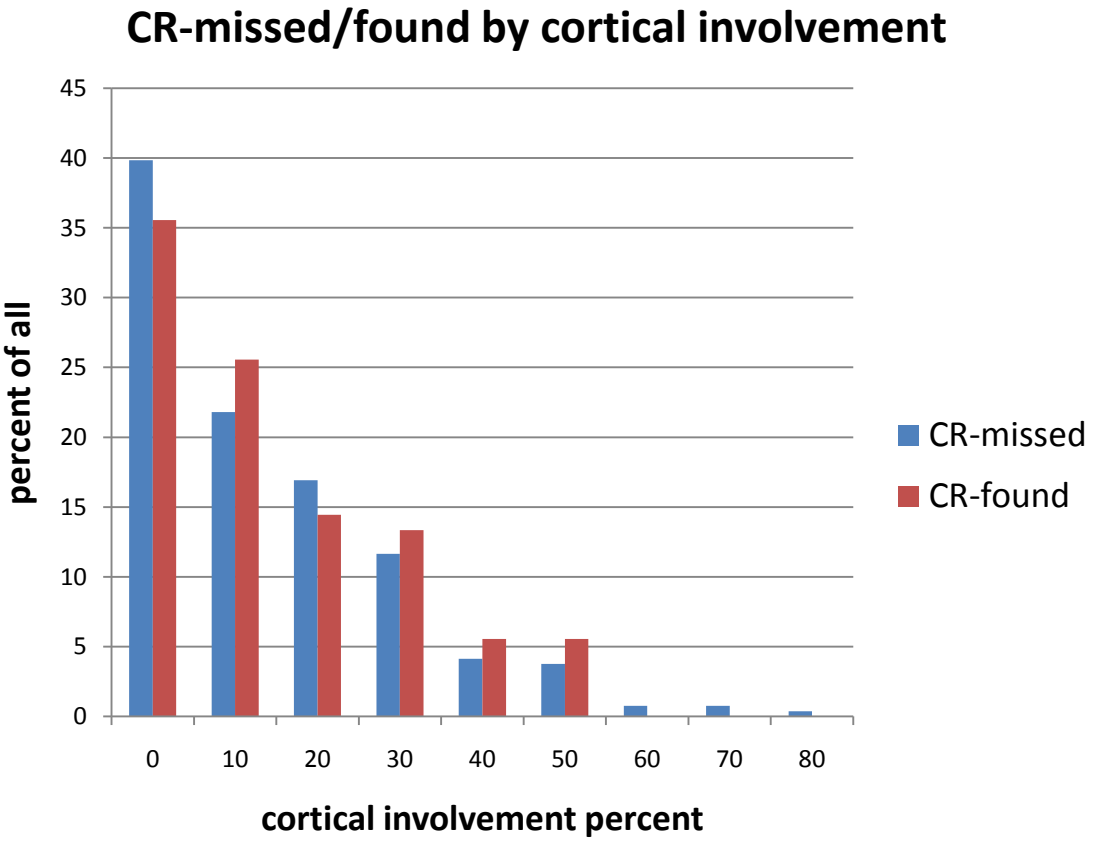
Mismatch vs. velikost lézí

- Léze, které jsme na CR neviděli ale nebyly menší



Mismatch vs. postižení kortiky

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



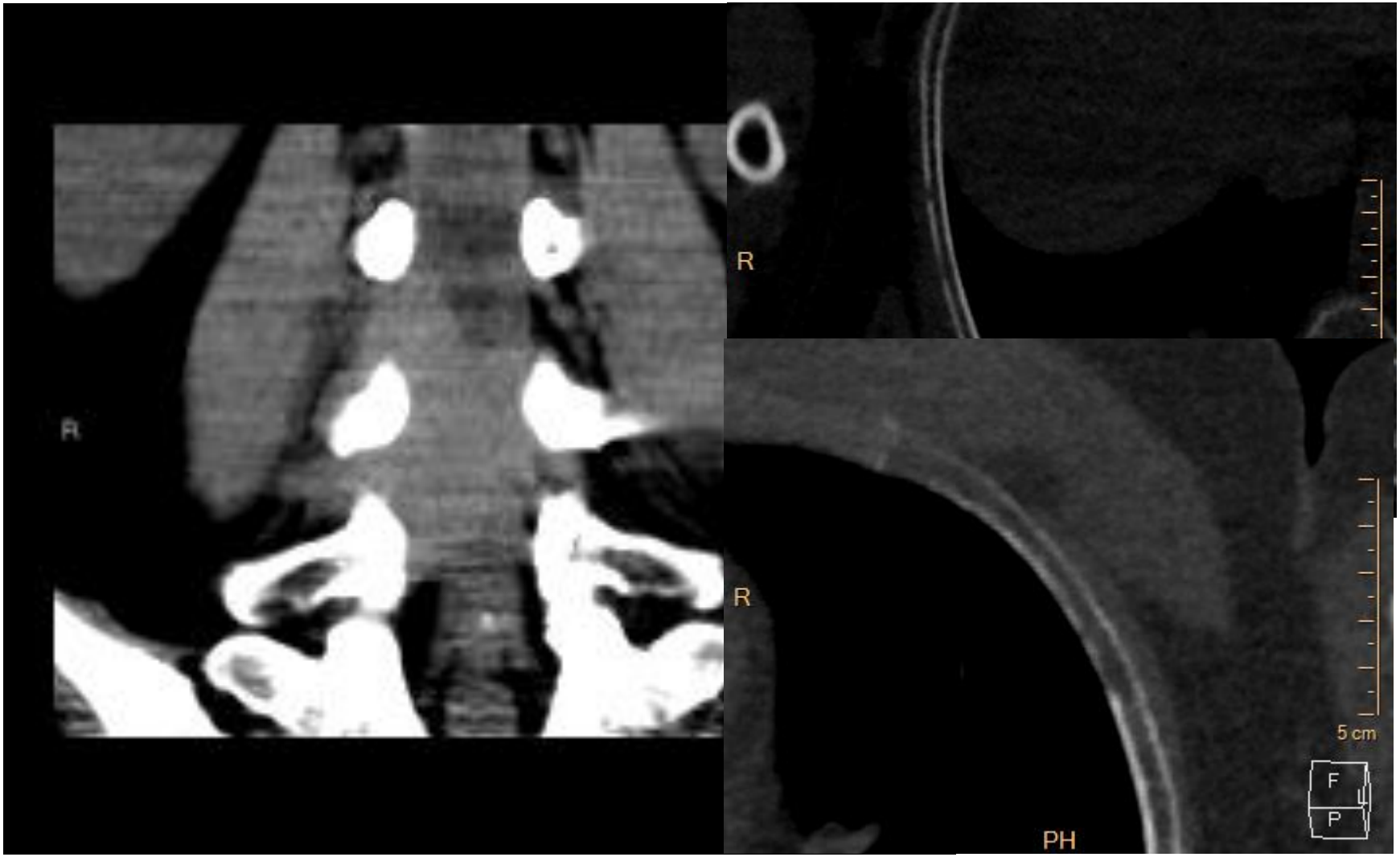
Cena

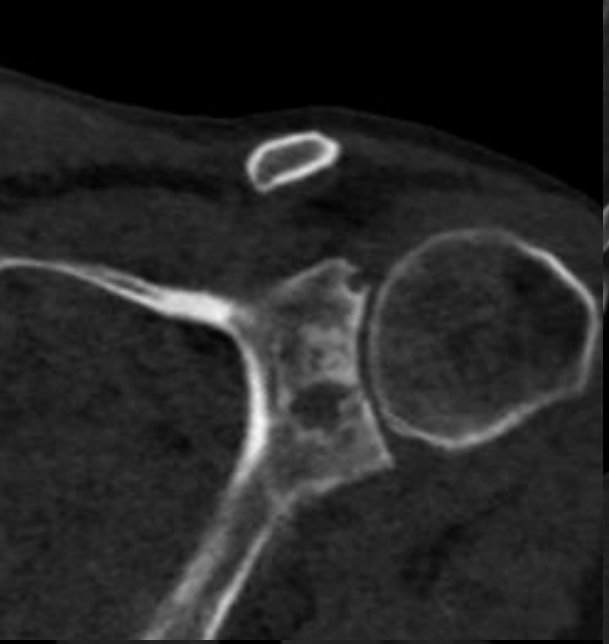
- CT
  - 2241CZK
  - 82Eur
- CR
  - 3981CZK
  - 145Eur

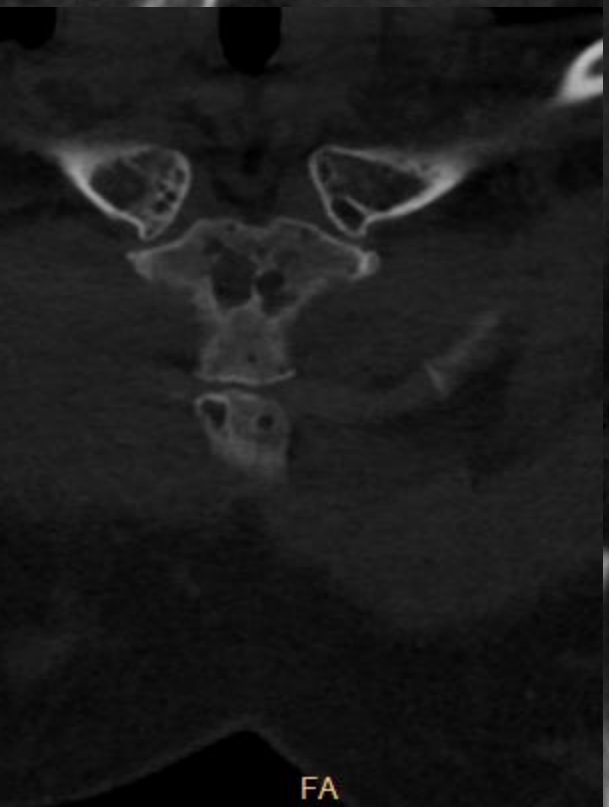
mSv

- CT
  - 2,5 – 3mSv
- CR
  - 2 – 2,5mSv

Nálezy

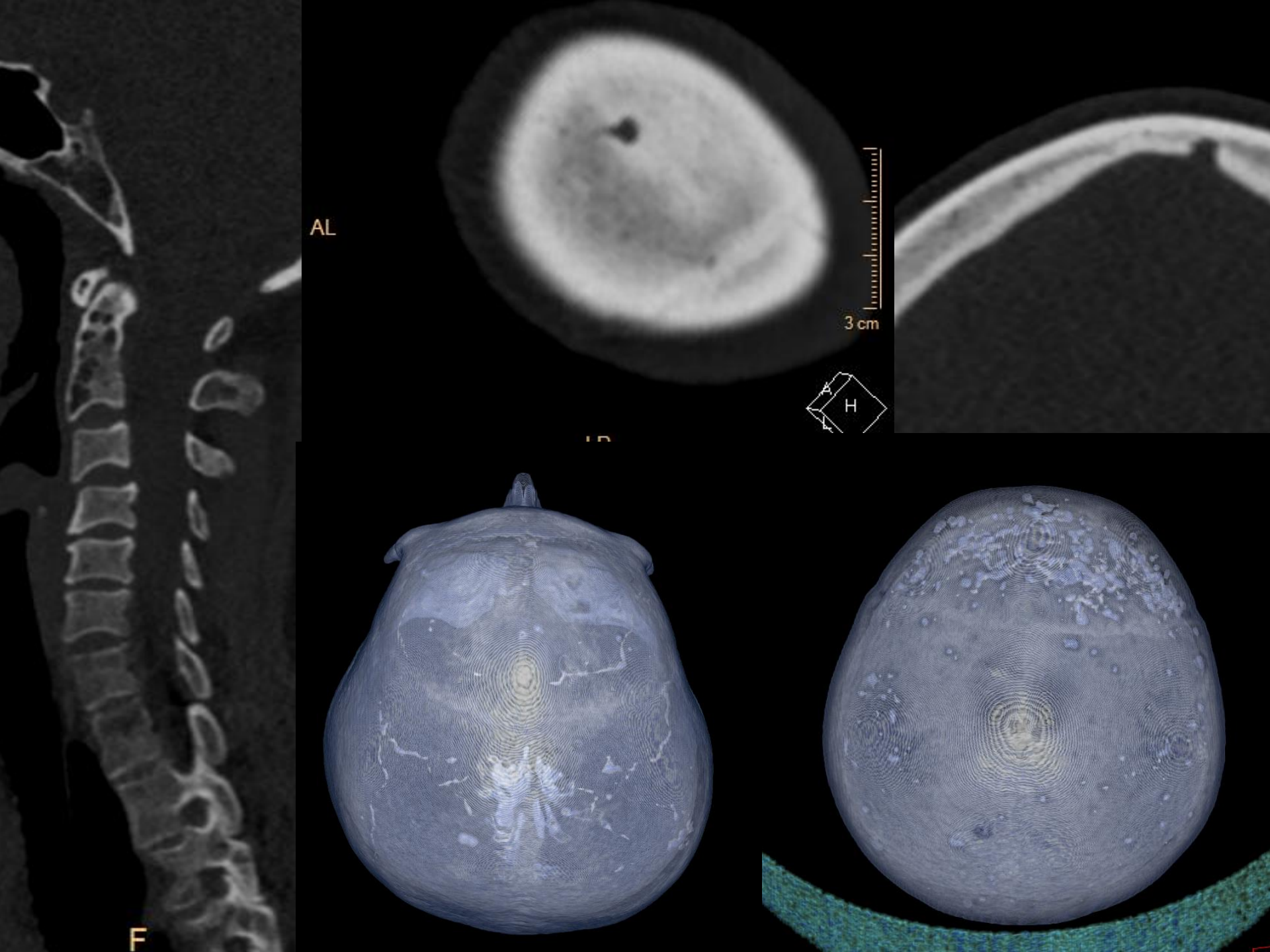





FA

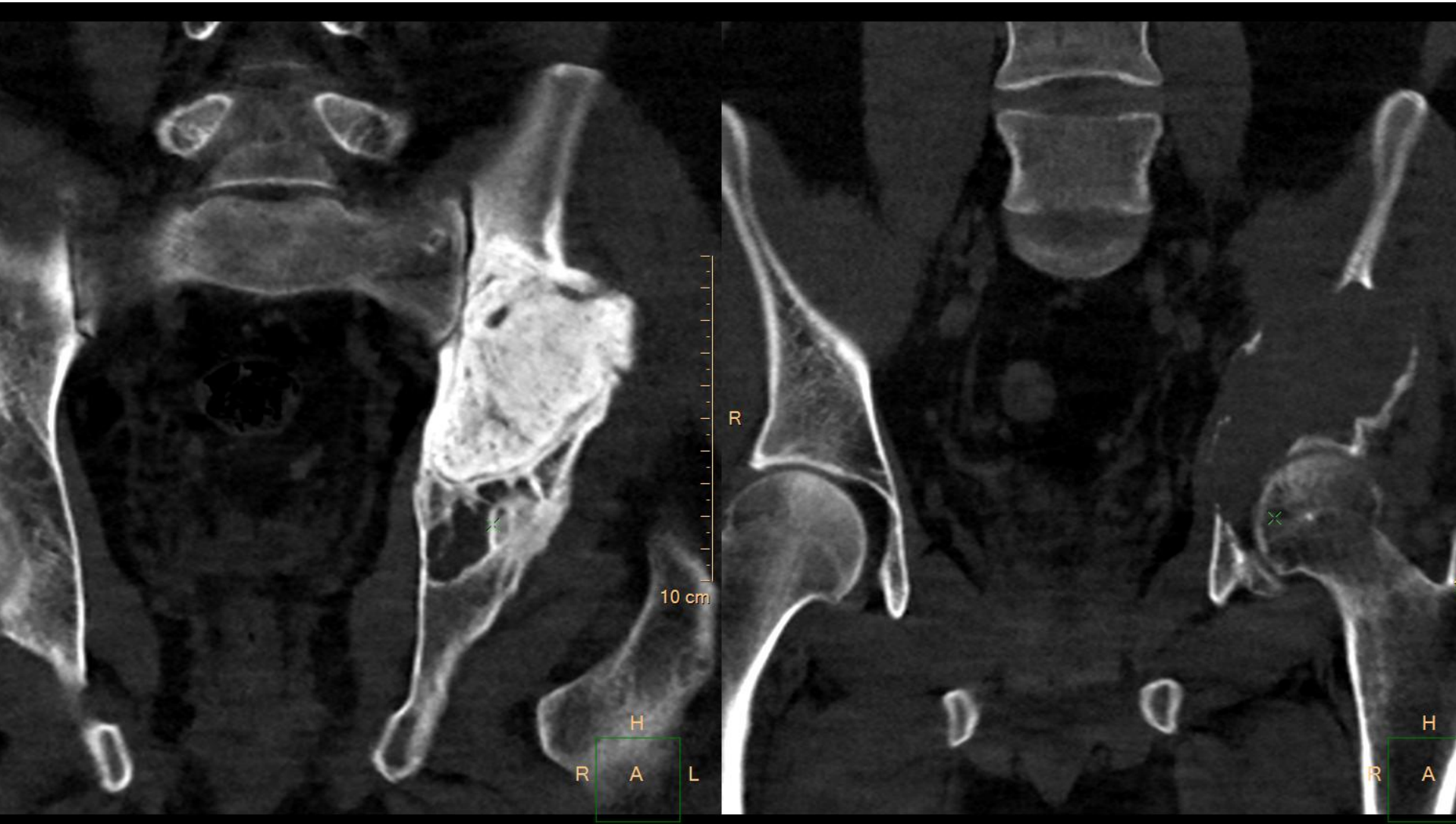

F


F


AL
3 cm
H
F

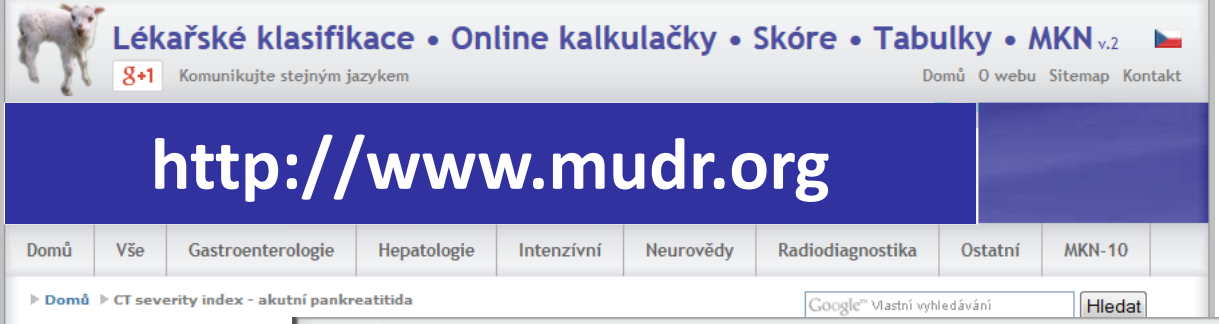

A
5 cm
H
A
L
P
F
F
AR
10 cm
A
L
F
F

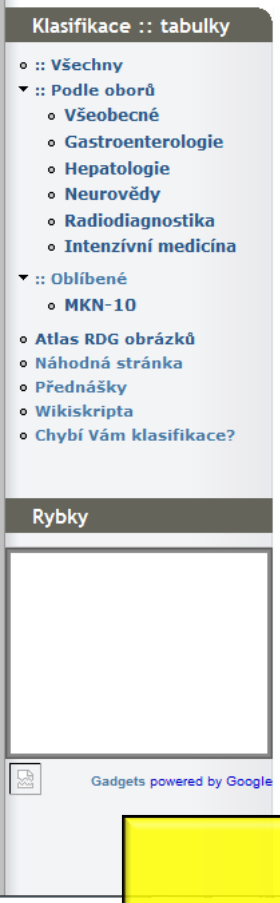
1,5 roku po SCT

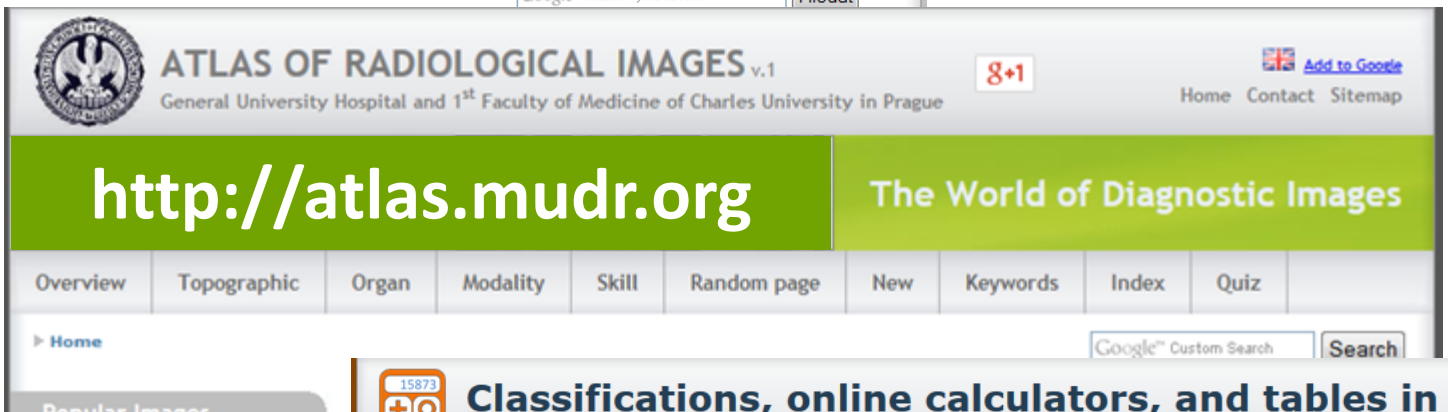


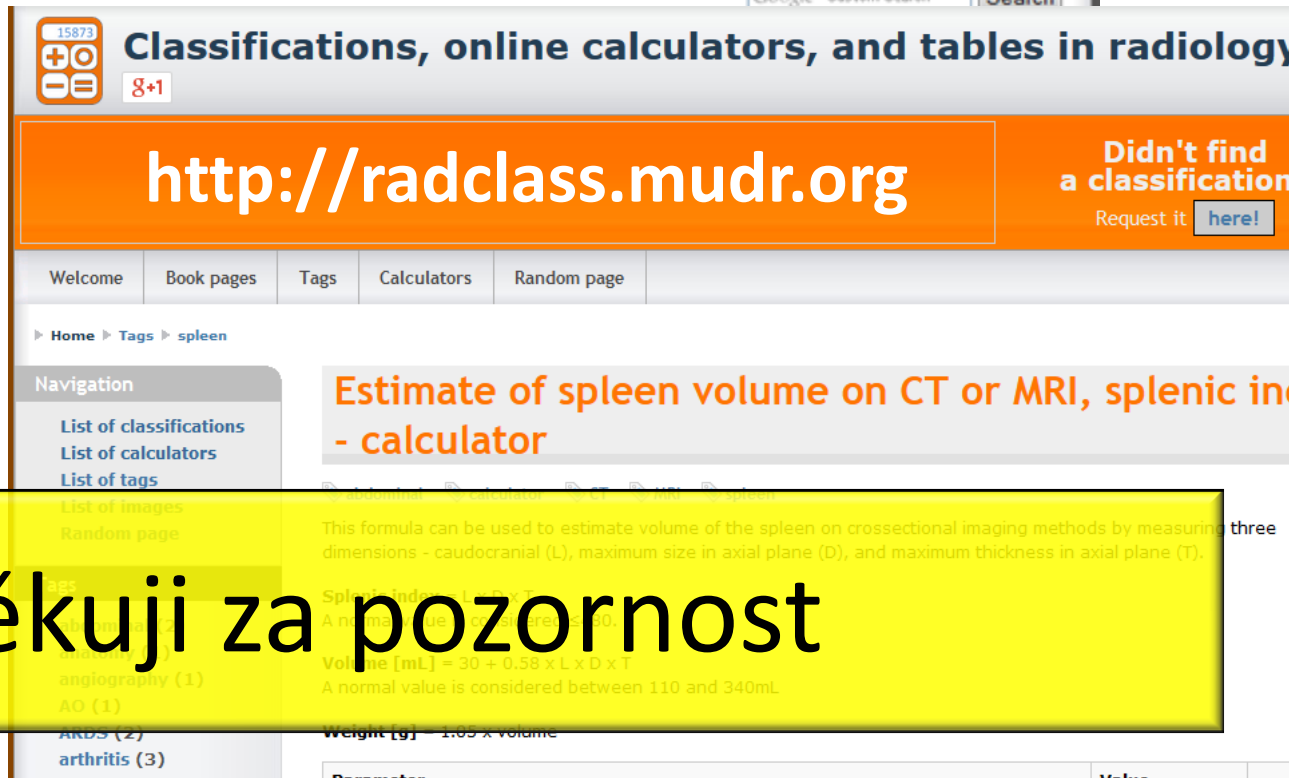
Závěr

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









Děkuji za pozornost