

Routine Preoperative Bone Scintigraphy has a Limited Impact on the Management of Patients with Invasive Bladder Cancer: A Retrospective Single-Centre Study

Christopher Soliman², Marc A. Furrer^{1,2}, Thomas Grueter¹, Piet Bosshard^{1,3}, Vartolomei Mihai Dorin⁴, Bernhard Kiss¹, George N. Thalmann¹, Beat Roth^{1,3},

1. Department of Urology, University Hospital of Bern, University of Bern, Bern, Switzerland

2. Department of Urology, The University of Melbourne, Royal Melbourne Hospital, Parkville, Victoria, Australia

3. Department of Urology, University Hospital of Lausanne (CHUV), University of Lausanne, Lausanne, Switzerland

4. Department of Cell and Molecular Biology, University of Medicine, Pharmacy, Sciences and Technology, Targu Mures, Romania

#C89

OBJECTIVES

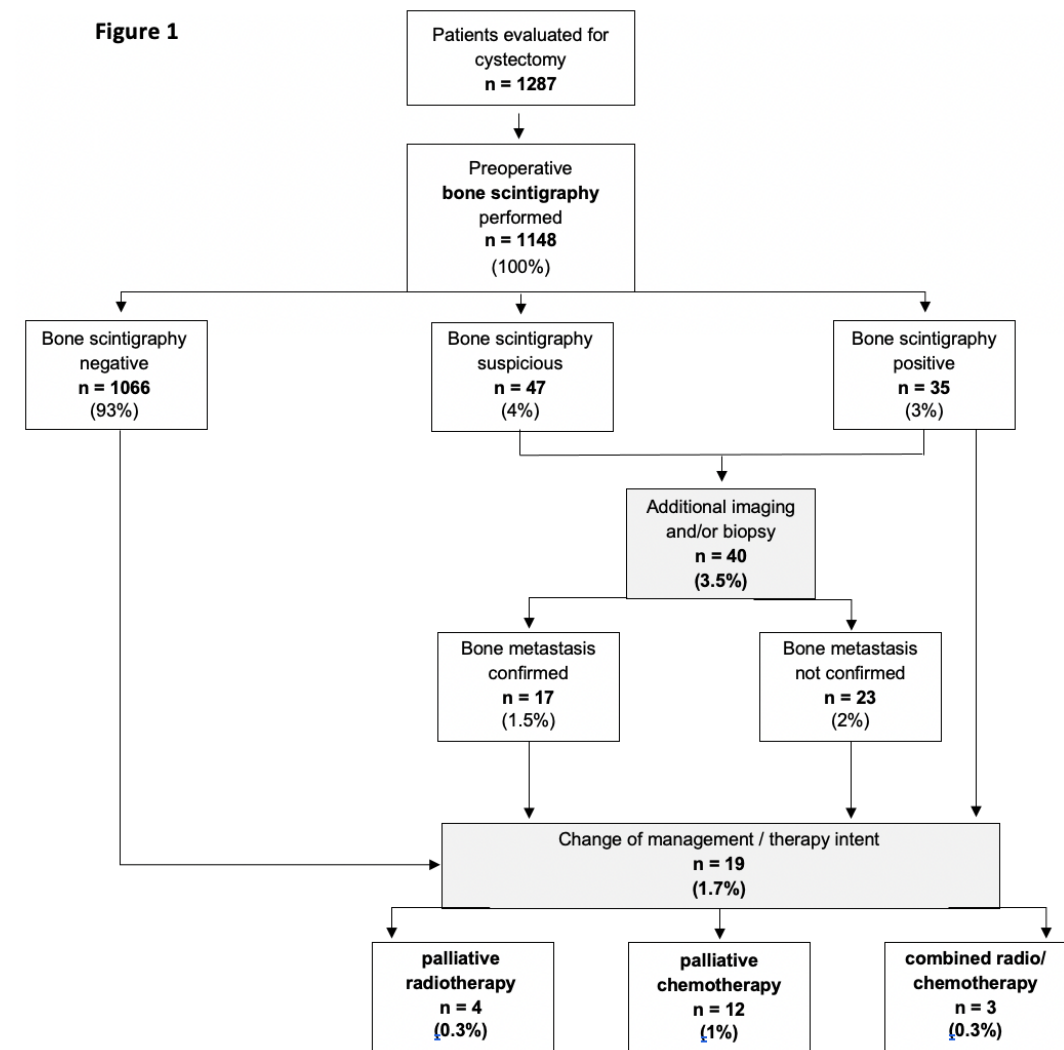
- According to current guidelines, **bone scintigraphy is not routinely indicated** in patients with **invasive bladder cancer prior to radical cystectomy** unless specific symptoms are present.
- These guidelines, however; are currently based on **sparse, low-quality data**.
- As such, the aim of this study is to assess the **clinical impact of routine staging bone scintigraphy** on further patient management.

METHODS

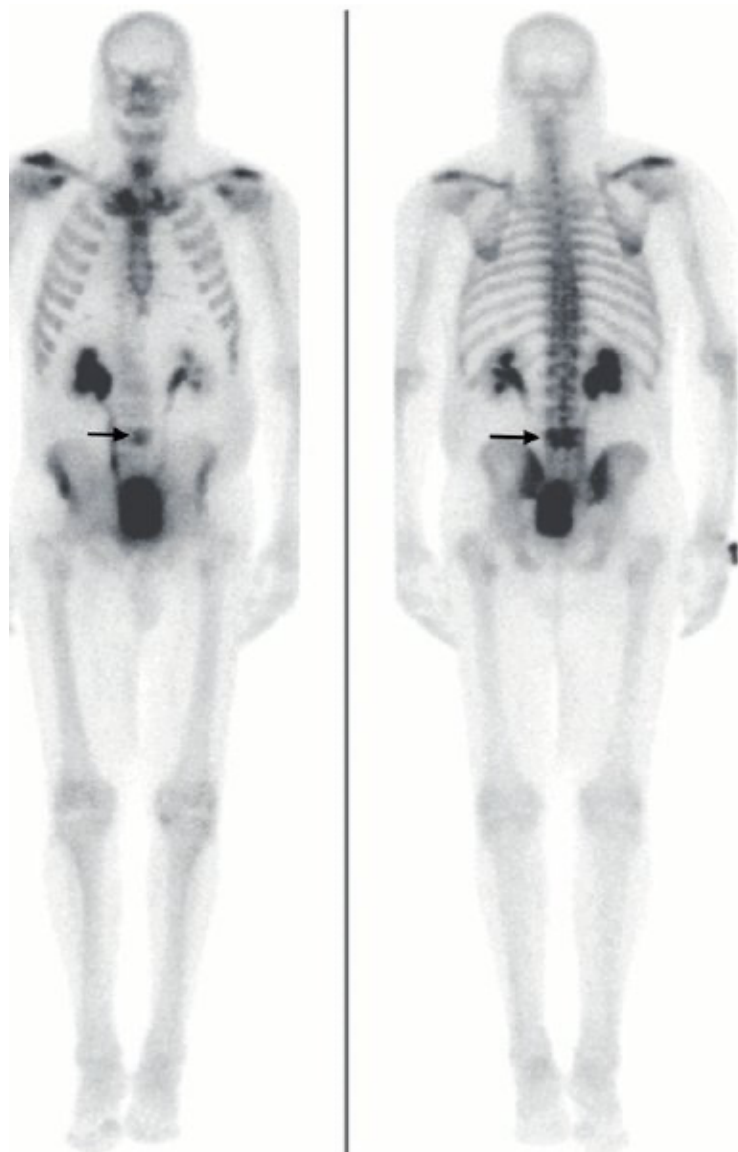
- We conducted a **retrospective, single-centre study** of 1287 consecutive patients who were scheduled to undergo radical cystectomy due to invasive bladder cancer between 01/2000 and 12/2017. All patients were prospectively followed-up according to our institutional protocol.
- We assessed **bone scintigraphy as staging imaging prior to radical cystectomy**.
- The primary endpoint was the **change in intended patient management**. Secondary endpoints were the **need for additional imaging**, the **diagnostic performance of baseline bone scintigraphy**, and the **association between clinical and radiological findings on bone metastases and survival**.
- Logistic and Cox regression models were used for univariate and multivariate analyses.

Table 1 - Patient characteristics	(n=1287)
Gender; n (%)	
male	917 (71)
female	370 (29)
Age; yrs, median (range)	69 (30 – 93)
Follow up; mos, median (IQR)	38 (11 88)
Clinical tumor stage after staging (pre-cystectomy); n (%)	
cT1	144 (11)
cT2	582 (45)
cT3	339 (26)
cT4	222 (17)
Clinical lymph node stage; n (%)	
cN0	989 (77)
cN+	298 (23)
Clinical M stage; n (%)	
cM0	1207 (94)
cM+	80 (6)
Tumor grade; n (%)	
G1	10 (1)
G2	94 (7)
G3	1183 (92)
Concomitant CIS; n (%)	396 (31)
Histological type; n (%)	
pure urothelial	1096 (85)
urothelial with additional variant histology in specimen	110 (9)
other histology (nested, micropapillary, neuroendocrine)	81 (6)

Prostate cancer; n (%)	
none	425 (46)
concomitant (not known before cystectomy)	343 (37)
previously known	27 (3)
unknown	122 (13)
Preoperative exam under anesthesia; n (%)	
not performed	374 (29)
bladder mobile (≤ cT3)	792 (62)
bladder fixed (cT4)	121 (9)
Chemotherapy; n (%)	
none	782 (61)
neoadjuvant	211 (16)
palliative (without cystectomy)	31 (2)
postoperative (adjuvant / palliative)	263 (21)
Radiotherapy; n (%)	
none	1030 (80)
preoperative / with curative intent	43 (3)
adjuvant	5 (1)
palliative	209 (16)
Prior intravesical instillation; n (%)	
BCG	213 (17)
Mitomycin/Epirubicin	49 (4)
Cystectomy performed (n (%))	1122 (87)
Yes	
Urinary diversion	
- orthotopic bladder substitute	569 (44)
- ileal conduit	472 (37)
- catheterizable pouch	54 (4)
No (reason;)	165 (13)
- metastatic disease	67 (41)
- locally advanced tumor	50 (30)
- patient unfit / denied RC	48 (29)



RESULTS



1148 of 1287 (89%) patients scheduled for radical cystectomy underwent bone scintigraphy as staging imaging.

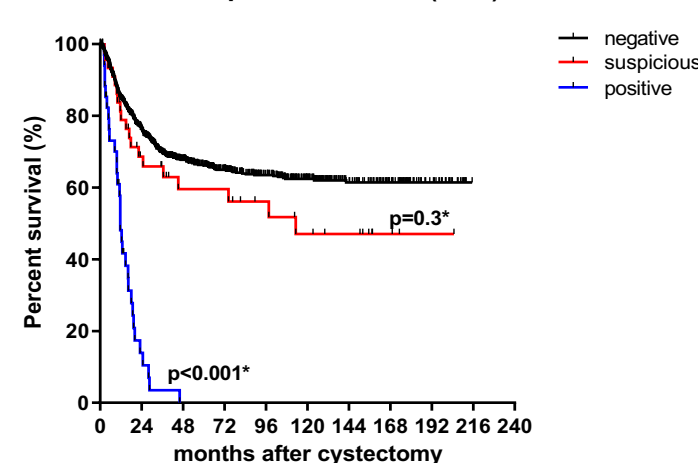
Overall, baseline bone scintigraphy led to a **change in intended management in 19/1148 (1.7%)** patients. Additional imaging was performed in **44/1148 (4%)** patients.

Although positive bone scintigraphy findings were associated with the **occurrence/development of bone metastases**, the diagnostic performance of baseline bone scintigraphy **was generally poor** (positive and negative predictive value, sensitivity and specificity were 56%, 89%, 27% and 96%, respectively).

Higher clinical tumor stage and the non-performance of cystectomy had **negative** impacts on CSS and OS, while positive bone scintigraphy was associated with worse CSS.

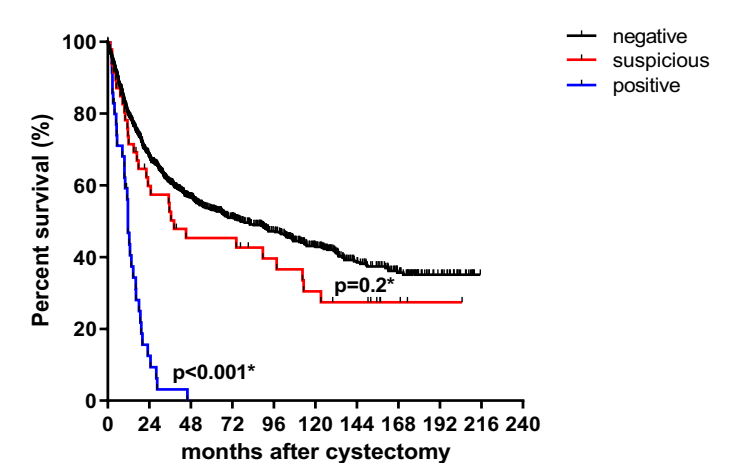
This study was limited by its retrospective nature and the lack of follow-up bone scintigraphy in all patients.

Cancer specific survival (CSS)



Number at risk	1066	630	446	342	256	172	112	78	29	0
negative bone scan	1066	630	446	342	256	172	112	78	29	0
suspicious bone scan	47	25	17	17	13	10	8	3	1	0
positive bone scan	35	4	0	0	0	0	0	0	0	0

Overall survival (OS)



Number at risk	1066	630	446	342	256	172	112	78	29	0
negative bone scan	1066	630	446	342	256	172	112	78	29	0
suspicious bone scan	47	25	17	17	13	10	8	3	1	0
positive bone scan	35	4	0	0	0	0	0	0	0	0

*log rank test compared to "negative"

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CONCLUSION

- These results demonstrate the **limited value of bone scintigraphy** in the staging of invasive bladder cancer and **do not support its routine use**.