



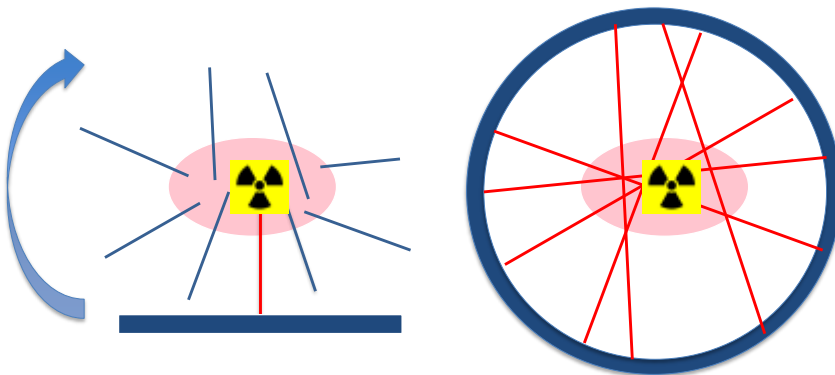
# Clinical PET/CT

Lutz S. Freudenberg  
ZRN Rheinland

[www.zrn-info.de](http://www.zrn-info.de)

1

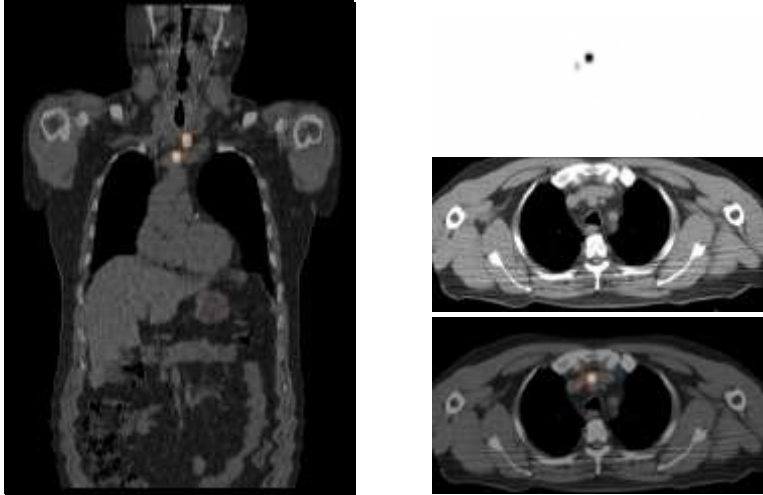
## SPECT and PET



[www.zrn-info.de](http://www.zrn-info.de)

2

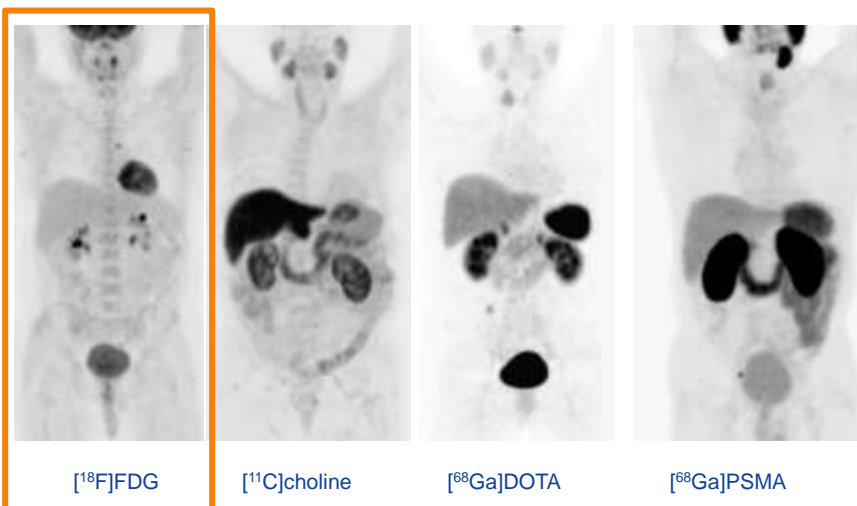
## PET/CT: Hybrid Imaging



WWW.ZRN-INFO.DE

3

## PET Tracer



„working-horse“

WWW.ZRN-INFO.DE

4

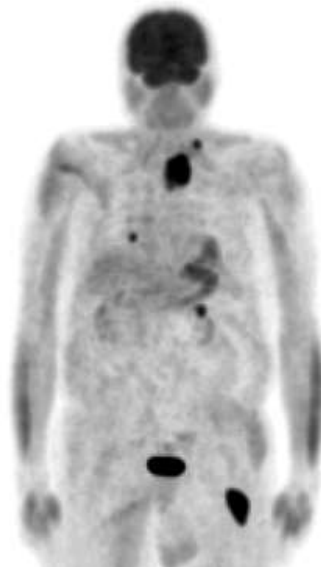
## [<sup>18</sup>F]-Fluordesoxyglukose (FDG)

- transported via glucose transporter
  - phosphorylation to FDG-6-phosphate
  - only marginal dephosphorylation
  - no glycolysis
- FDG-6-phosphate remains within the tissue („ashe“)

WWW.ZRN-INFO.DE

5

## [<sup>18</sup>F]-Fluordesoxyglukose (FDG)



WWW.ZRN-INFO.DE

6

## Evidence for FDG-PET(/CT)

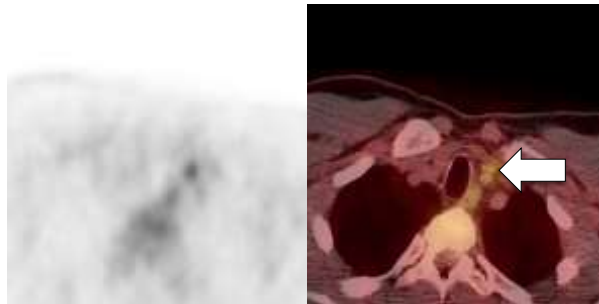
average sensitivity (18.402 examinations)	84%
average specificity (14.264 examinations)	88%
change of staging and therapeutic concept post FDG-PET	30%

[http://jnm.snmjournals.org/content/42/5\\_suppl/1S.long](http://jnm.snmjournals.org/content/42/5_suppl/1S.long)

WWW.ZRN-INFO.DE

7

## FDG-PET/CT: Thyroid Cancer

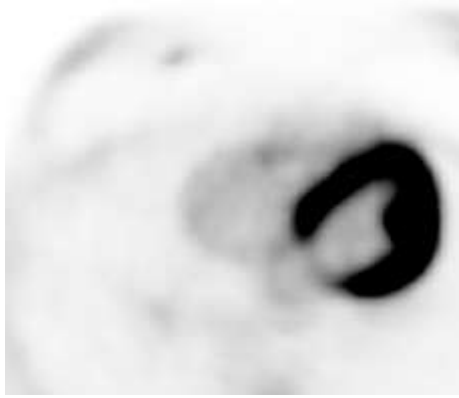


Isolated lymph node metastasis left neck

WWW.ZRN-INFO.DE

8

FDG-PET/CT: CUP

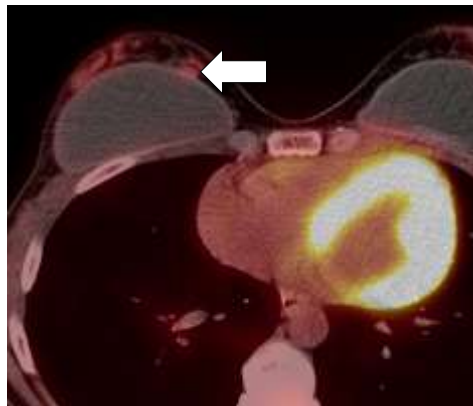


14 lymph node metastases in right axilla

WWW.ZRN-INFO.DE

9

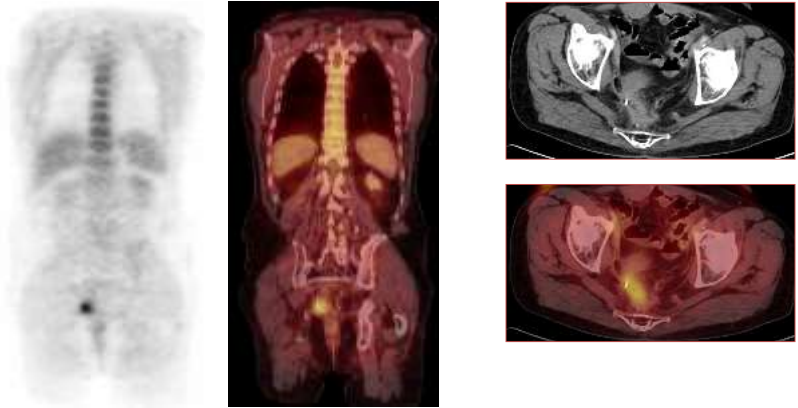
FDG-PET/CT: CUP



WWW.ZRN-INFO.DE

10

### FDG-PET/CT: Rectal Cancer

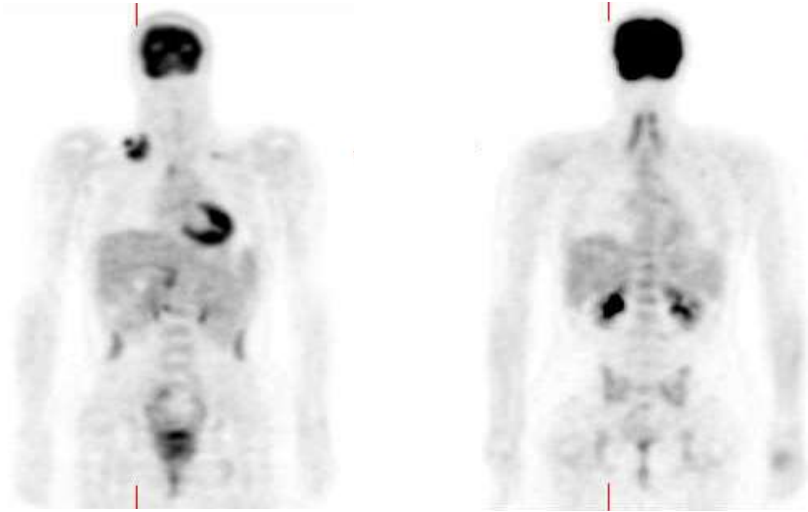


Rectal cancer: recurrence vs. scar

WWW.ZRN-INFO.DE

11

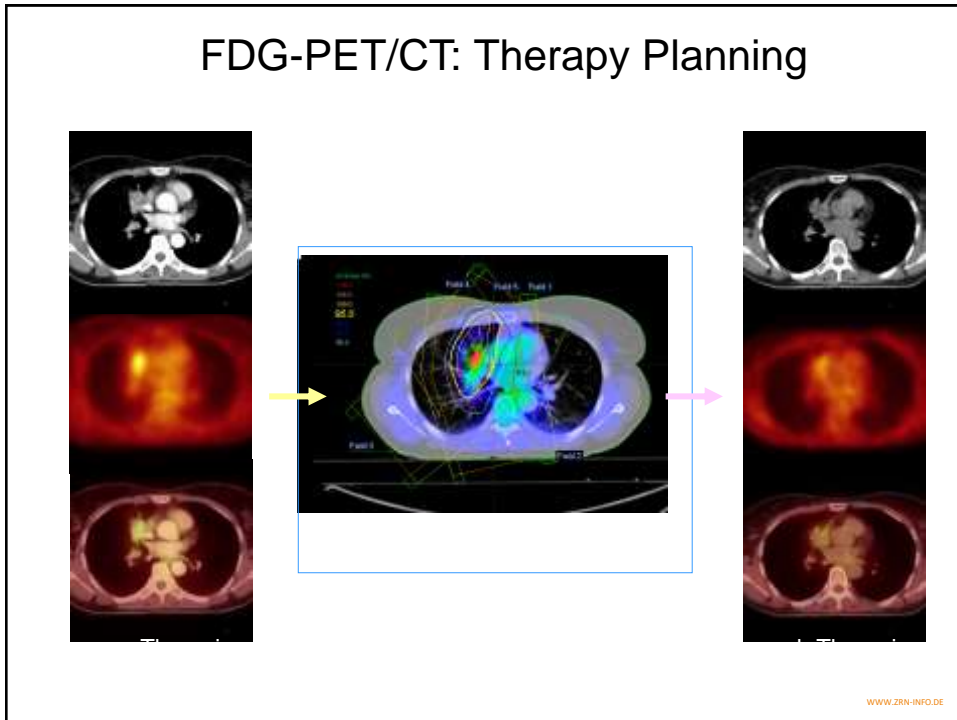
### FDG-PET/CT: Lymphoma



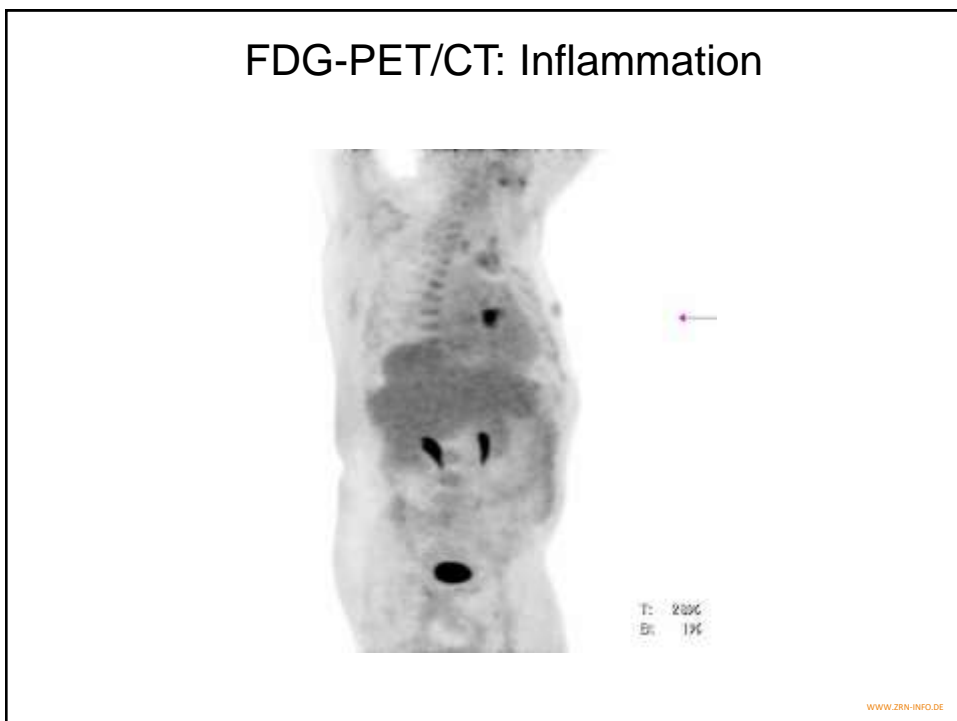
staging in NHL                      restaging in NHL

WWW.ZRN-INFO.DE

12

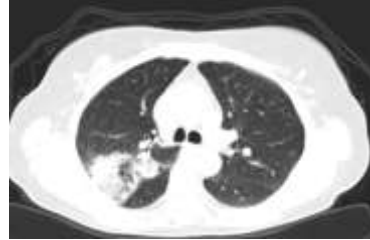


13



14

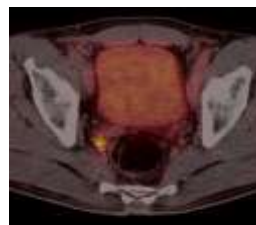
## FDG-PET/CT: Malignant vs. Inflammation



WWW.ZRN-INFO.DE

15

## Non-FDG-PET/CT: [ $^{68}\text{Ga}$ ]-PSMA



WWW.ZRN-INFO.DE

16



## Summary

### PET/CT

- is well established in oncological diagnostics
- allows evaluation of function and anatomy
- will gain further importance with raise of individualized therapy
- needs interdisciplinary cooperation

### Tracers

- FDG is the „working horse“
- new tracers will evolve with new diagnostic (and therapeutic) perspectives

[www.zrn-info.de](http://www.zrn-info.de)

17



Prof. Dr. Dr. Lutz S. Freudenberg, M.A., M.B.A

eMail: [l.freudenberg@zrn-info.de](mailto:l.freudenberg@zrn-info.de)

[www.zrn-info.de](http://www.zrn-info.de)

18