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A106

Semiautomatic method for discrimination between adaequate and inadaequate early response in FDG PET/CT of paediatric Hodgkin lymphoma patients

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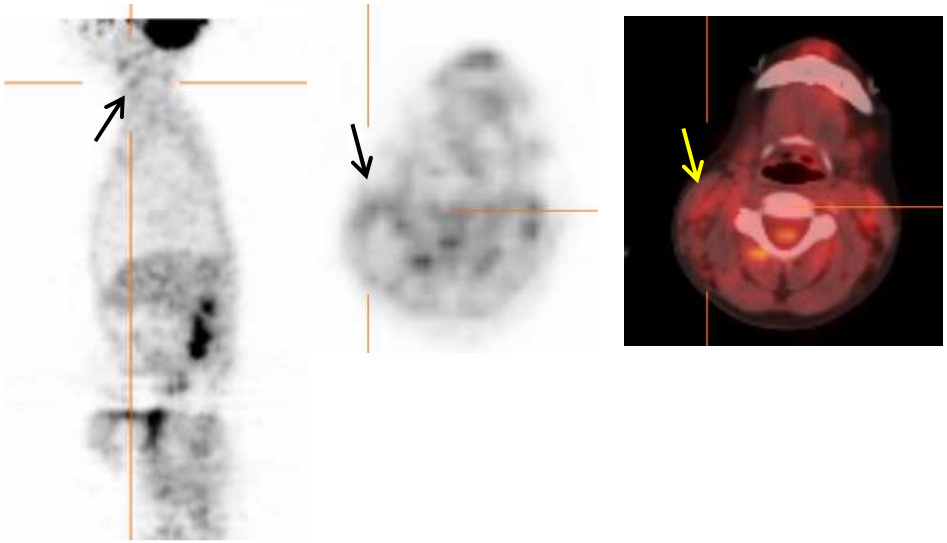
Visual comparison of residuals with liver or mediastinum may be problematic

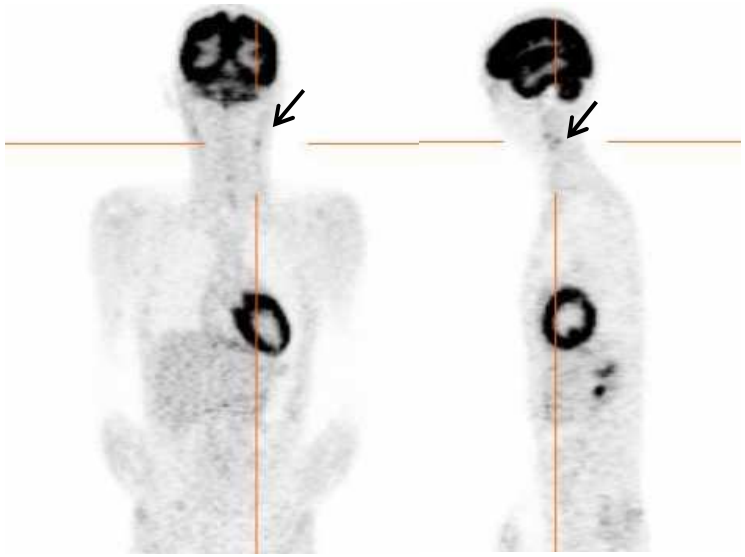
Visual illusion:

Estimation of a focus depends on background activity

Dark background

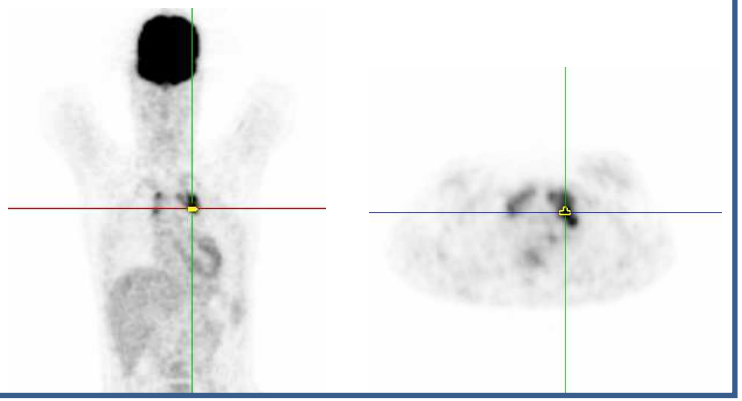


Small foci



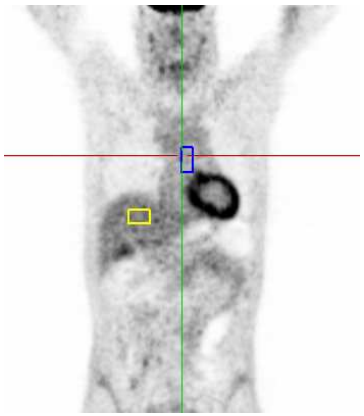
Semiautomatic method: VOI positioning

Tumor residuals
SUV_{peak} (4 voxels)



Liver: SUV_{mean} 30 ml

Mediastinum: SUV_{mean} 13 ml

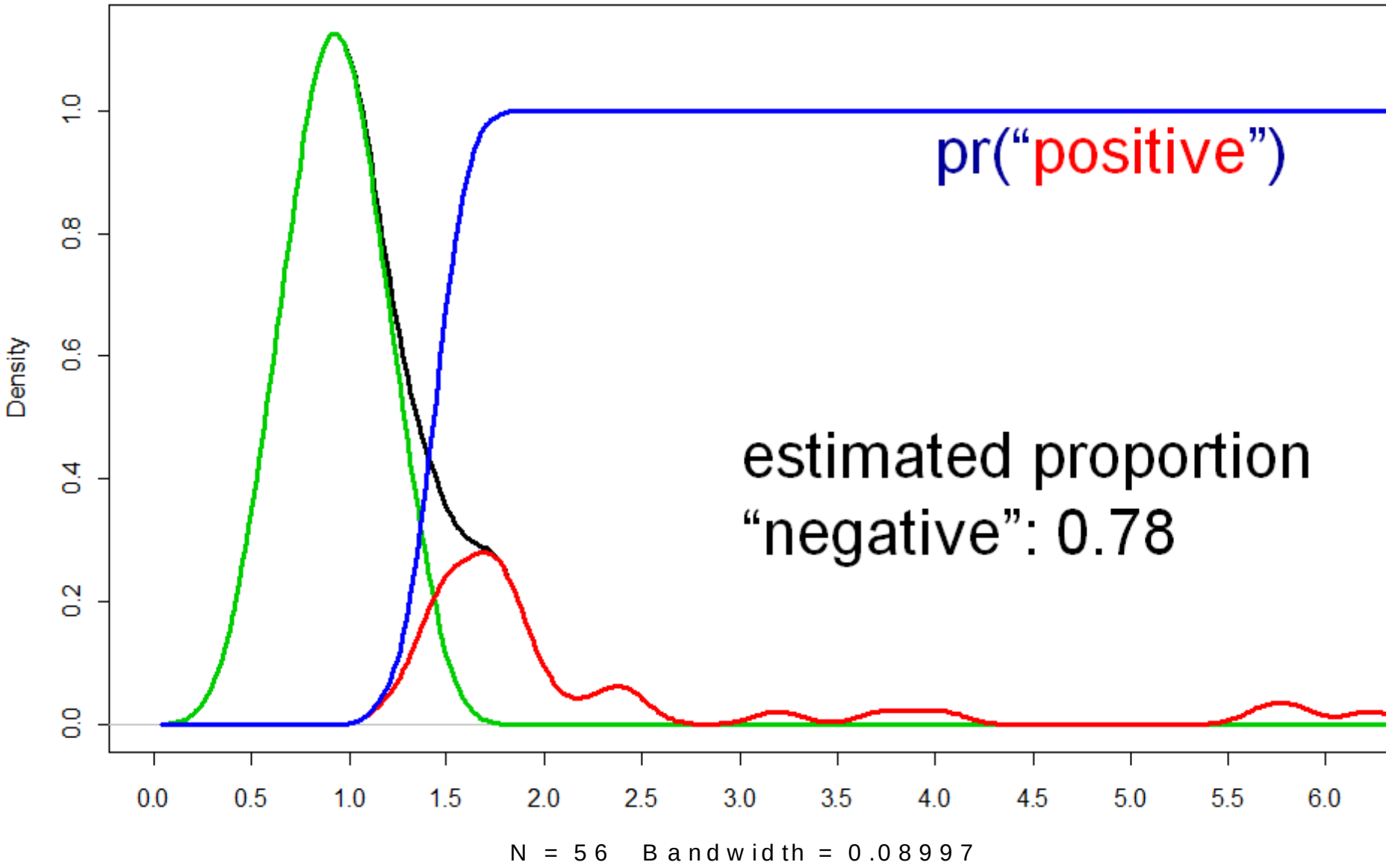


$Q_{resid/liver} = SUV_{peak}Residuum / SUV_{mean}Liver$

$Q_{resid/mediast.} \approx Q_{resid/liver} * 0.68$

Residual uptake of all patients can be projected on a single scale

Density curve of $Q_{resid/liver}$-values
(n = 152 from EuroNet-PHL-C1)



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Conclusion

Robust and reproducible method

All residuals projected on a single scale.

Calculation of „negative“ and „positive“ part and best cut-off value.

In our population:

-best cut-off at Qresid/liver = 1.3
-78 % „negatives“ and 22 % „positives“

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C101

‘Tumor-Finder’ and ‘Response-Controller’ - Semiautomatic Algorithms for Detection and Quantification of Tumor Lesions in Lymphoma

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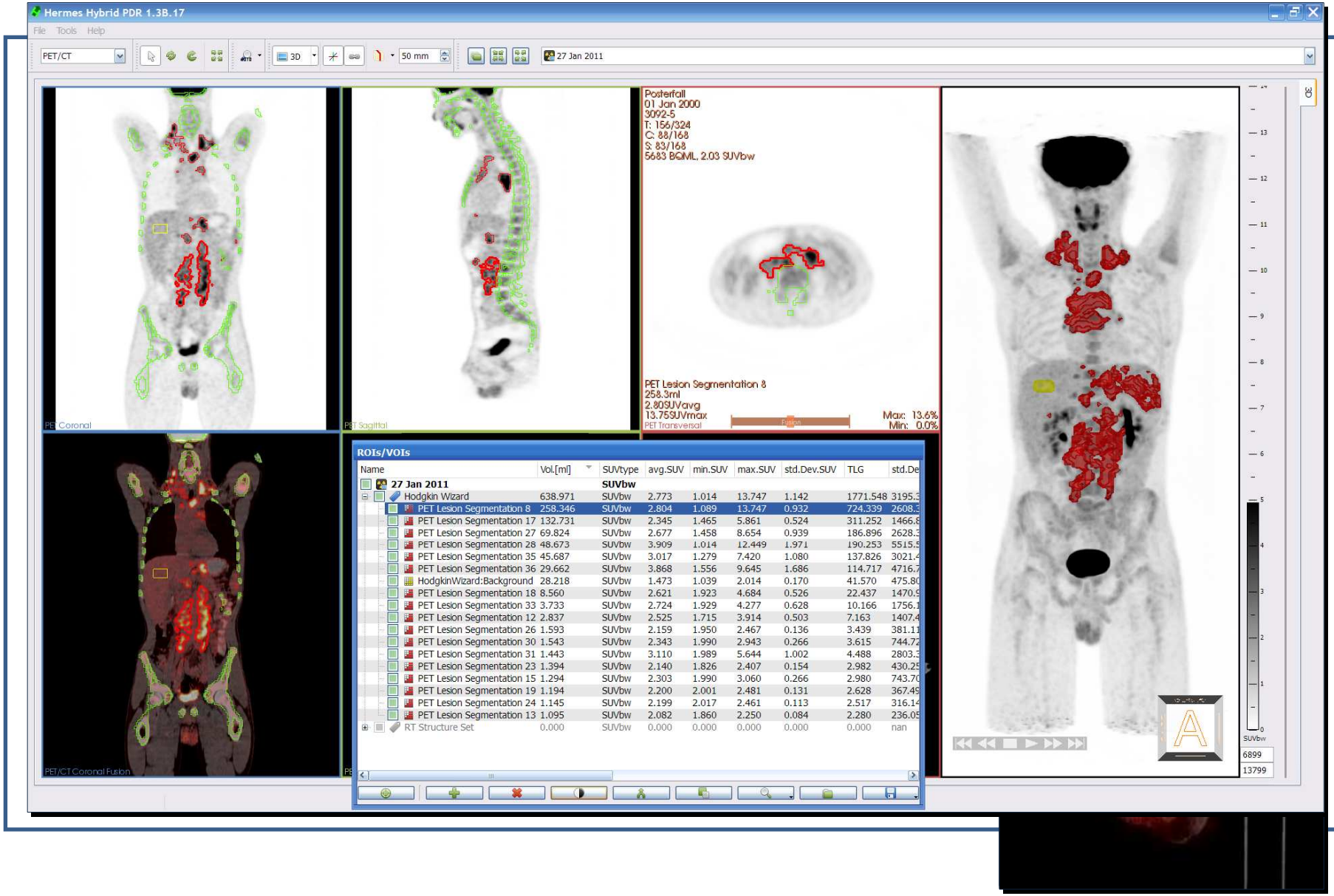
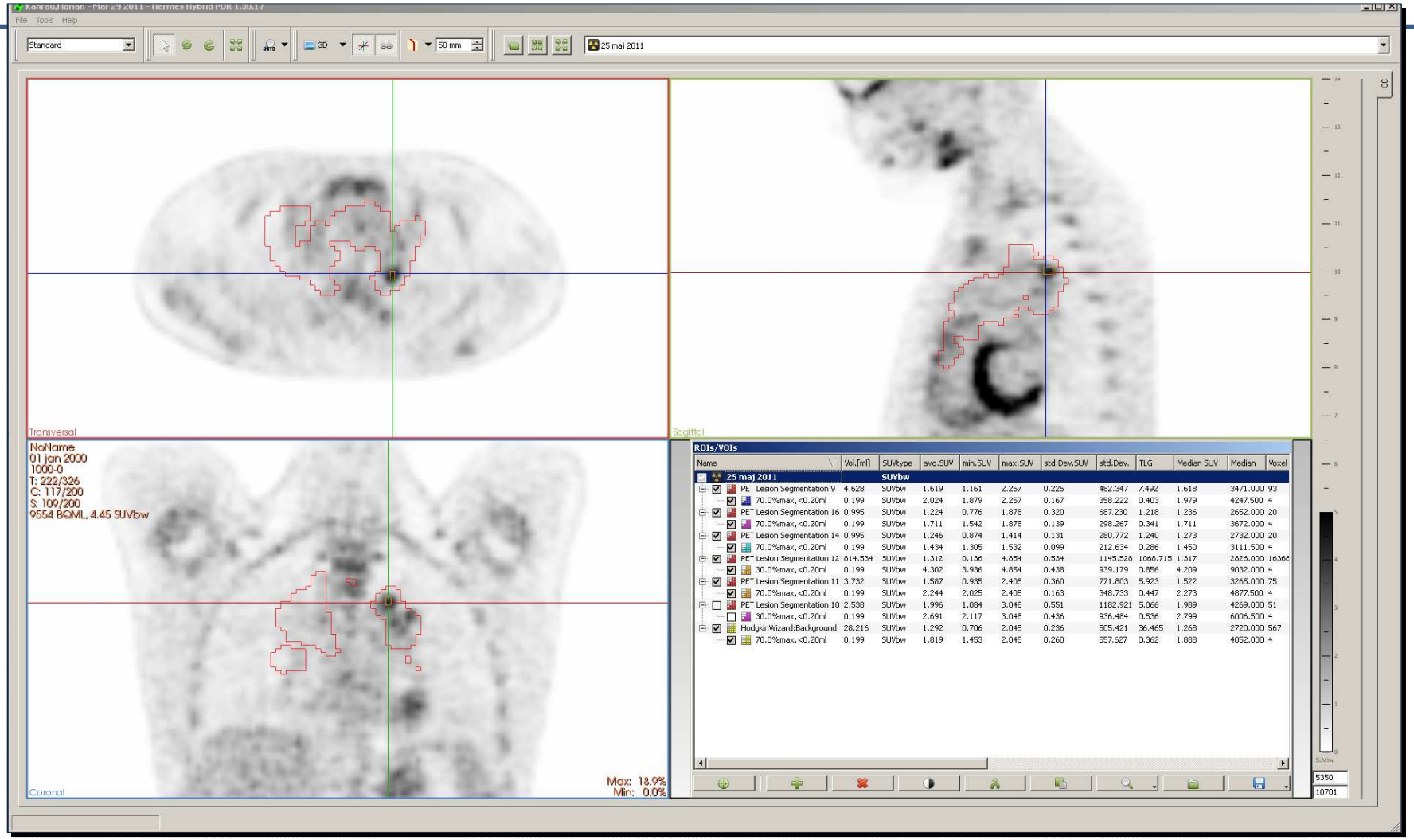
Tumor Finder



Response Controller



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Conclusion

- Evaluated on 33 patients with newly diagnosed paediatric Hodgkin Lymphoma
- Compared to the results of conservative reading process
- *"Tumor-Finder"* module
  - Separation of the skeleton from the CT performed correctly in 22/33 patients
  - In 11 PET/CT studies positive oral contrast agent had been used, resulting in separation of parts of the intestine
  - Lesion segmentation correctly identified 157 of 170 lesions

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