# Interim PET/CT-based prognostic model for the treatment of diffuse large B cell lymphoma in the post-rituximab era

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# Patients and Methods (I)

- **186 newly diagnosed patients with DLBCL enrolled from Aug. 2004 to Dec. 2010**
- **PET/CT was performed at diagnosis and after three or four cycles of R-CHOP chemotherapy (Mid-treatment)**
- **The response of interim PET/CT : based on the combined evaluation with three parameters using visual, SUV-based and MTV-based assessments**
- **Receiver-operating characteristic (ROC) analysis : evaluate the optimal cutoff value of ΔSUVmax or ΔMTV2.5 for predicting disease progression**

# Patients and Methods (II)

- **Five-point scale (5-PS) based on the Deauville criteria**

  **- Positivity : more than grade 4**

- **The percentage of SUVmax reduction (ΔSUVmax) between initial and interim PET/CT**

$$\Delta SUVmax\ (\%) = \frac{[SUVmax\ (initial) - SUVmax\ (interim)]}{SUVmax\ (initial)} \times 100$$

- **The percentage of metabolic tumor volume reduction (ΔMTV2.5)**

  **between initial and interim PET**

  **- To define the exact tumor margins around the target lesions**

  **with SUV cutoff value of 2.5 → automatically calculated by software**

  **- The MTV2.5 reduction rate (ΔMTV2.5) was calculated as same formula**

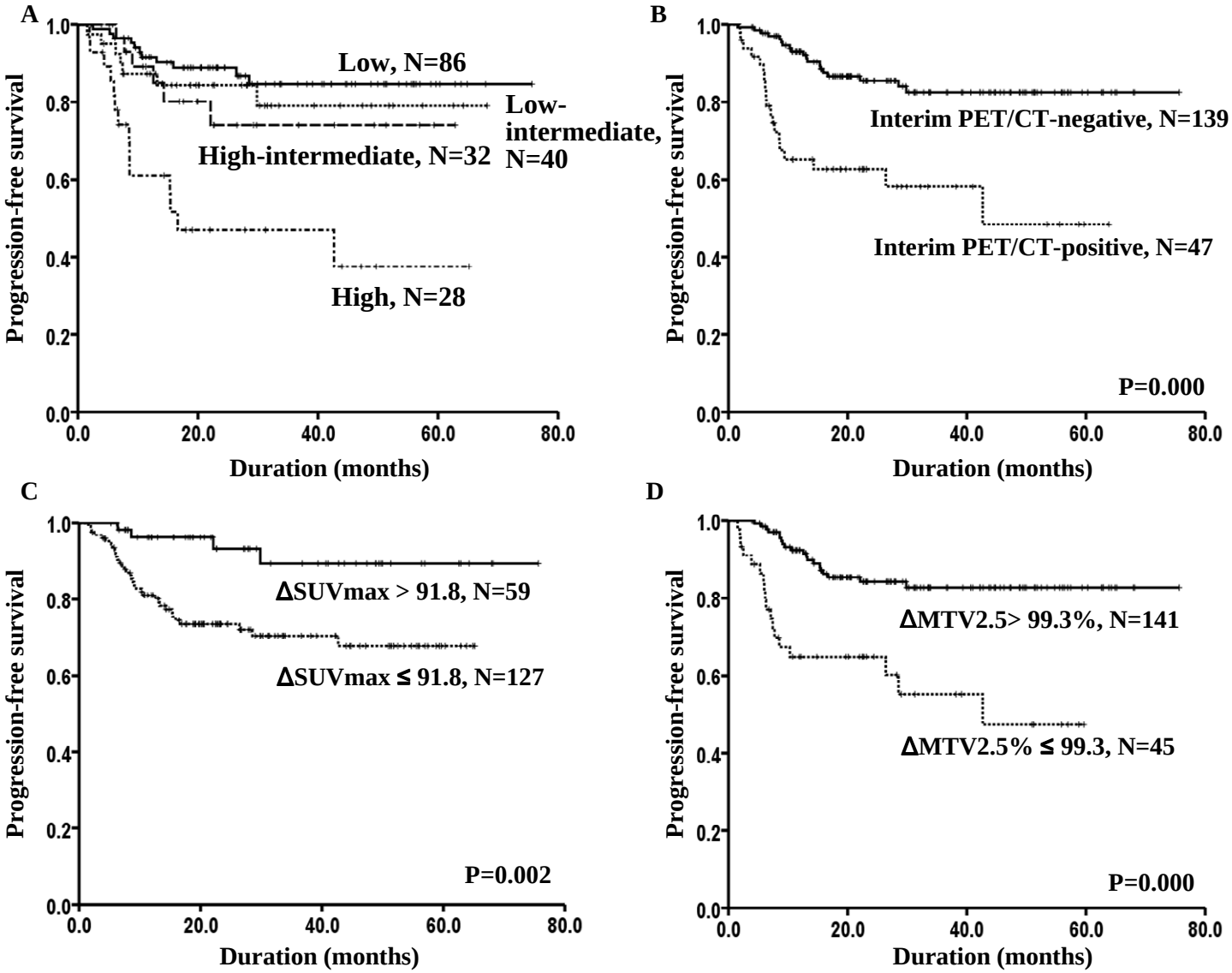
  **as SUVmax reduction rate.**

# Results (I)

## Patient Characteristics

| *Parameters* | *N. of patients (%)* |
|---|---|
| Age, median, years | 61 (range: 17 – 83) |
| Age > 60 | 103 (55.4) |
| Male / female | 106 / 80 |
| Performance status 2-3 | 29 (15.6) |
| LDH, high | 86 (46.2) |
| Stage | |
| I – II | 95 (51.1) |
| III – IV | 91 (48.9) |
| Bulky | 19 (10.2) |
| Bone marrow involvement | 10 (5.4) |
| B symptom | 28 (15.1) |
| International Prognostic Index | |
| Low | 86 (46.2) |
| Low-intermediate | 40 (21.5) |
| High-intermediate | 32 (17.2) |
| High | 28 (15.1) |
| Number of R-CHOP, median | 6 (range: 3 - 8) |
| Involved field radiation therapy | 47 (25.3) |
| Interim PET/CT by visual assessment | |
| positive | 47 (25.3) |
| negative | 139 (74.7) |
| Response to R-CHOP | |
| CR / PR | 153 (82.3) / 26 (14.0) |
| SD / PD | 1 (0.5) / 6 (3.2) |
| Relapse | 38 (20.4) |

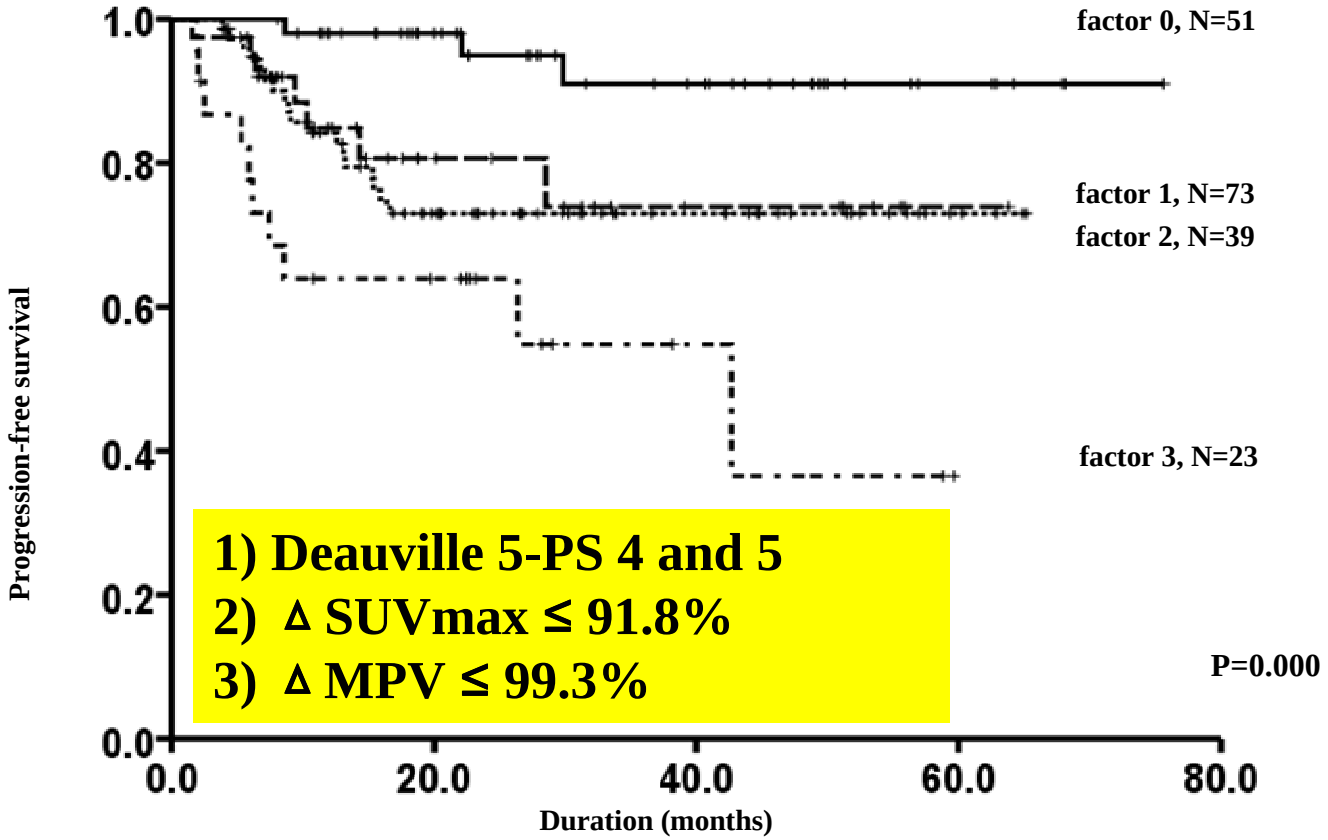
# Results (II)



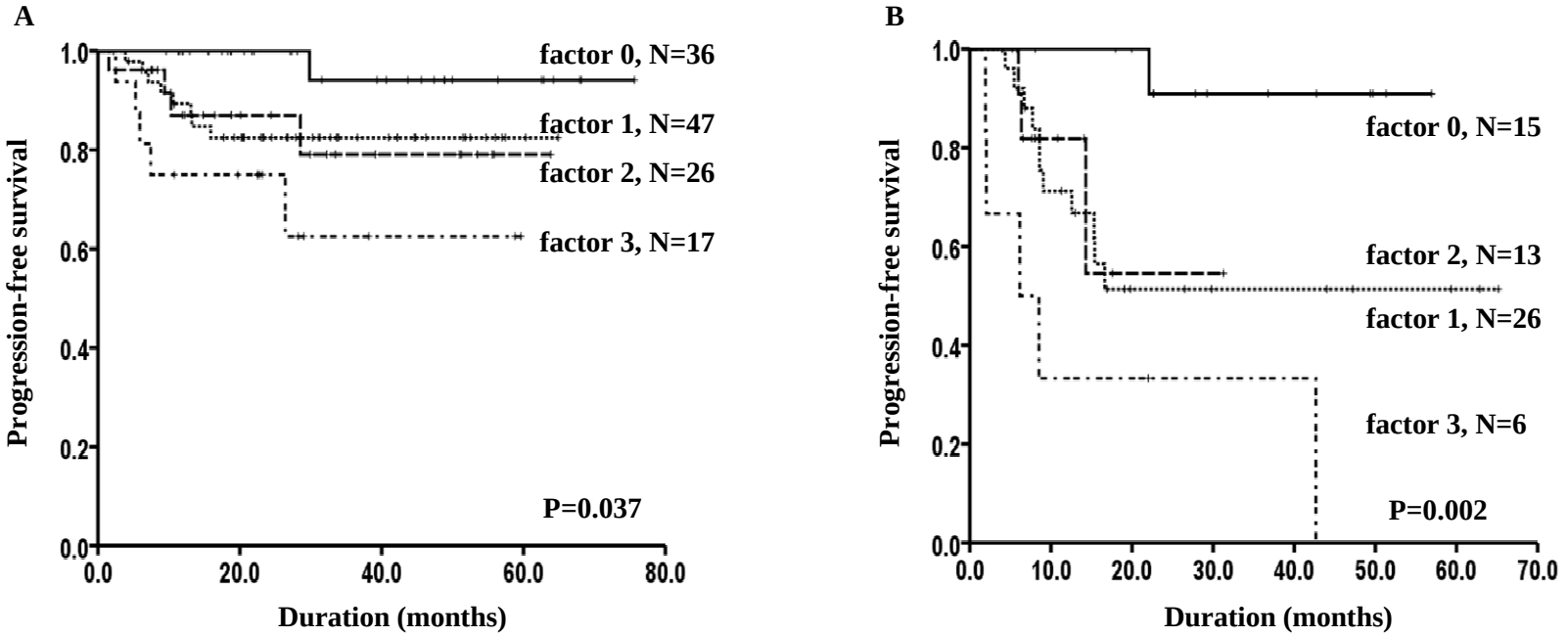

**Kaplan-Meier estimates of PFS in (A) all patients with DLBCL according to IPI risk and classified according to (B) positivity by the Deauville five-point scale, (C) the ΔSUVmax with the optimal cutoff value of 91.8% and (D) the ΔMTV2.5 with the optimal cutoff value of 99.3% in interim PET/CT.**

# Results (III)

## Prognostic model based on interime PET/CT



# Results (IV)




**Kaplan-Meier estimates of PFS by IPI, according to the combined evaluation of visual, SUV-based and MTV-based assessment in the low/low-intermediate IPI risk group (N=126) (A) and in the high/high-intermediate IPI risk group (N=60) (B).**

# Summary

- **Positivity on the Deauville 5-PS, the optimal cutoff value of ΔSUVmax or the optimal cutoff value of ΔMTV2.5 could each predict disease progression.**
- **When combining these three parameters from PET/CT, the model can have strong predictive power for prognosis.**

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