**Supplemental Tables:**

**Supplemental Table 1A. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of different sizes of bone marrow metastases in anatomical regions at baseline (before start of chemotherapy)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lesion size | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| < 5 mm | 2-[18F]FDG-PET-MRI | 18 | 0 | 0 | 202 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 13 | 5 | 0 | 202 | 72.2 | 100.0 | 100.0 | 97.6 | 97.7 |
| Combined | 18 | 0 | 0 | 202 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 5-10 mm | 2-[18F]FDG-PET-MRI | 39 | 3 | 0 | 178 | 92.9 | 100.0 | 100.0 | 98.3 | 98.6 |
| DW-MRI | 40 | 2 | 0 | 178 | 95.2 | 100.0 | 100.0 | 98.9 | 99.1 |
| Combined | 42 | 0 | 0 | 178 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| > 10 mm | 2-[18F]FDG-PET-MRI | 53 | 1 | 0 | 166 | 98.1 | 100.0 | 100.0 | 99.4 | 99.5 |
| DW-MRI | 53 | 1 | 0 | 166 | 98.1 | 100.0 | 100.0 | 99.4 | 99.5 |
| Combined | 54 | 0 | 0 | 166 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 1B. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of different sizes of bone marrow metastases in anatomical regions after chemotherapy**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lesion size | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| < 5 mm | 2-[18F]FDG-PET-MRI | 53 | 4 | 0 | 373 | 93.0 | 100.0 | 100.0 | 98.9 | 99.1 |
| DW-MRI | 53 | 4 | 0 | 373 | 93.0 | 100.0 | 100.0 | 98.9 | 99.1 |
| Combined | 57 | 0 | 0 | 373 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 5-10 mm | 2-[18F]FDG-PET-MRI | 95 | 11 | 0 | 324 | 89.6 | 100.0 | 100.0 | 96.7 | 97.4 |
| DW-MRI | 94 | 12 | 0 | 324 | 88.7 | 100.0 | 100.0 | 96.4 | 97.2 |
| Combined | 106 | 0 | 0 | 324 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| > 10 mm | 2-[18F]FDG-PET-MRI | 126 | 10 | 0 | 294 | 92.6 | 100.0 | 100.0 | 96.7 | 97.7 |
| DW-MRI | 134 | 2 | 0 | 294 | 98.5 | 100.0 | 100.0 | 99.3 | 99.5 |
| Combined | 136 | 0 | 0 | 294 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 2A. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in different anatomical regions at baseline (before start of chemotherapy)\***

| Anatomical region | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Head | 2-[18F]FDG-PET-MRI | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 2 | 1 | 0 | 19 | 66.7 | 100.0 | 100.0 | 95.0 | 95.5 |
| Combined | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Spine | 2-[18F]FDG-PET-MRI | 13 | 1 | 0 | 8 | 92.9 | 100.0 | 100.0 | 88.9 | 95.5 |
| DW-MRI | 12 | 2 | 0 | 8 | 85.7 | 100.0 | 100.0 | 80.0 | 90.9 |
| Combined | 14 | 0 | 0 | 8 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Ribs/Clavicle | 2-[18F]FDG-PET-MRI | 13 | 0 | 0 | 9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 12 | 1 | 0 | 9 | 92.3 | 100.0 | 100.0 | 90.0 | 95.5 |
| Combined | 13 | 0 | 0 | 9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Humerus | 2-[18F]FDG-PET-MRI | 6 | 1 | 0 | 15 | 85.7 | 100.0 | 100.0 | 93.8 | 95.5 |
| DW-MRI | 6 | 1 | 0 | 15 | 85.7 | 100.0 | 100.0 | 93.8 | 95.5 |
| Combined | 7 | 0 | 0 | 15 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Radius/Ulna | 2-[18F]FDG-PET-MRI | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 2 | 1 | 0 | 19 | 66.7 | 100.0 | 100.0 | 95.0 | 95.5 |
| Combined | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Pelvis | 2-[18F]FDG-PET-MRI | 11 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 10 | 1 | 0 | 11 | 90.9 | 100.0 | 100.0 | 91.7 | 95.5 |
| Combined | 11 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Femur | 2-[18F]FDG-PET-MRI | 10 | 1 | 0 | 11 | 90.9 | 100.0 | 100.0 | 91.7 | 95.5 |
| DW-MRI | 11 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 11 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Tibia/Fibula | 2-[18F]FDG-PET-MRI | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 2 | 1 | 0 | 19 | 66.7 | 100.0 | 100.0 | 95.0 | 95.5 |
| Combined | 3 | 0 | 0 | 19 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

\*Since there were no metastases in the hands and feet of our patients, these two anatomical regions were excluded from this table.

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 2B. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in different anatomical regions after chemotherapy\***

| Anatomical region | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Head | 2-[18F]FDG-PET-MRI | 9 | 1 | 0 | 33 | 90.0 | 100.0 | 100.0 | 97.1 | 97.7 |
| DW-MRI | 10 | 0 | 0 | 33 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 10 | 0 | 0 | 33 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Spine | 2-[18F]FDG-PET-MRI | 31 | 1 | 0 | 11 | 96.9 | 100.0 | 100.0 | 91.7 | 97.7 |
| DW-MRI | 27 | 5 | 0 | 11 | 84.4 | 100.0 | 100.0 | 68.8 | 88.4 |
| Combined | 32 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Ribs/Clavicle | 2-[18F]FDG-PET-MRI | 19 | 3 | 0 | 21 | 86.4 | 100.0 | 100.0 | 87.5 | 93.0 |
| DW-MRI | 16 | 6 | 0 | 21 | 72.7 | 100.0 | 100.0 | 77.8 | 86.0 |
| Combined | 22 | 0 | 0 | 21 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Humerus | 2-[18F]FDG-PET-MRI | 14 | 1 | 0 | 28 | 93.3 | 100.0 | 100.0 | 96.6 | 97.7 |
| DW-MRI | 12 | 3 | 0 | 28 | 80.0 | 100.0 | 100.0 | 90.3 | 93.0 |
| Combined | 15 | 0 | 0 | 28 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Radius/Ulna | 2-[18F]FDG-PET-MRI | 4 | 1 | 0 | 38 | 80.0 | 100.0 | 100.0 | 97.4 | 97.7 |
| DW-MRI | 5 | 0 | 0 | 38 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 5 | 0 | 0 | 38 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Pelvis | 2-[18F]FDG-PET-MRI | 28 | 4 | 0 | 11 | 87.5 | 100.0 | 100.0 | 73.3 | 90.7 |
| DW-MRI | 30 | 2 | 0 | 11 | 93.8 | 100.0 | 100.0 | 84.6 | 95.3 |
| Combined | 32 | 0 | 0 | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Femur | 2-[18F]FDG-PET-MRI | 23 | 5 | 0 | 15 | 82.1 | 100.0 | 100.0 | 75.0 | 88.4 |
| DW-MRI | 28 | 0 | 0 | 15 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 28 | 0 | 0 | 15 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Tibia/Fibula | 2-[18F]FDG-PET-MRI | 11 | 1 | 0 | 31 | 91.7 | 100.0 | 100.0 | 96.9 | 97.7 |
| DW-MRI | 12 | 0 | 0 | 31 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 12 | 0 | 0 | 31 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

\*Since there were no metastases in the hands and feet of our patients, these two anatomical regions were excluded from this table.

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 3A. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in different tumors at baseline (before start of chemotherapy)**

| Tumors | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sarcoma | 2-[18F]FDG-PET-MRI | 30 | 2 | 0 | 88 | 93.8 | 100.0 | 100.0 | 97.8 | 98.3 |
| DW-MRI | 29 | 3 | 0 | 88 | 90.6 | 100.0 | 100.0 | 96.7 | 97.5 |
| Combined | 32 | 0 | 0 | 88 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Lymphoma | 2-[18F]FDG-PET-MRI | 26 | 0 | 0 | 44 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 21 | 5 | 0 | 44 | 80.8 | 100.0 | 100.0 | 89.8 | 92.9 |
| Combined | 26 | 0 | 0 | 44 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Carcinoma | 2-[18F]FDG-PET-MRI | 4 | 0 | 0 | 16 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 4 | 0 | 0 | 16 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 4 | 0 | 0 | 16 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Wilms Tumor | 2-[18F]FDG-PET-MRI | 2 | 1 | 0 | 7 | 66.7 | 100.0 | 100.0 | 87.5 | 90.0 |
| DW-MRI | 3 | 0 | 0 | 7 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 3 | 0 | 0 | 7 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 3B. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in different tumors after chemotherapy**

| Tumors | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sarcoma | 2-[18F]FDG-PET-MRI | 106 | 14 | 0 | 130 | 88.3 | 100.0 | 100.0 | 90.3 | 94.4 |
| DW-MRI | 105 | 15 | 0 | 130 | 87.5 | 100.0 | 100.0 | 89.7 | 94.0 |
| Combined | 120 | 0 | 0 | 130 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Lymphoma | 2-[18F]FDG-PET-MRI | 14 | 2 | 0 | 74 | 87.5 | 100.0 | 100.0 | 97.4 | 97.8 |
| DW-MRI | 15 | 1 | 0 | 74 | 93.8 | 100.0 | 100.0 | 98.7 | 98.9 |
| Combined | 16 | 0 | 0 | 74 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Carcinoma | 2-[18F]FDG-PET-MRI | 4 | 0 | 0 | 26 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| DW-MRI | 4 | 0 | 0 | 26 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 4 | 0 | 0 | 26 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Wilms Tumor | 2-[18F]FDG-PET-MRI | 15 | 1 | 0 | 44 | 93.8 | 100.0 | 100.0 | 97.8 | 98.3 |
| DW-MRI | 16 | 0 | 0 | 44 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Combined | 16 | 0 | 0 | 44 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 4A. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in axial and appendicular skeleton at baseline (before start of chemotherapy)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Skeletal region | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| Axial skeleton | 2-[18F]FDG-PET-MRI | 40 | 1 | 0 | 47 | 97.6 | 100.0 | 100.0 | 97.9 | 98.9 |
| DW-MRI | 36 | 5 | 0 | 47 | 87.8 | 100.0 | 100.0 | 90.4 | 94.3 |
| Combined | 41 | 0 | 0 | 47 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Appendicular skeleton | 2-[18F]FDG-PET-MRI | 22 | 2 | 0 | 108 | 91.7 | 100.0 | 100.0 | 98.2 | 98.5 |
| DW-MRI | 21 | 3 | 0 | 108 | 87.5 | 100.0 | 100.0 | 97.3 | 97.7 |
| Combined | 24 | 0 | 0 | 108 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value

**Supplemental Table 4B. The diagnostic performance of 2-[18F]FDG-PET-MRI and DW-MRI for the diagnosis of bone marrow metastases in axial and appendicular skeleton after chemotherapy**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Skeletal region | Image modality | TP | FN | FP | TN | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
| Axial skeleton | 2-[18F]FDG-PET-MRI | 87 | 9 | 0 | 76 | 90.6 | 100.0 | 100.0 | 89.4 | 94.8 |
| DW-MRI | 83 | 13 | 0 | 76 | 86.5 | 100.0 | 100.0 | 85.4 | 92.4 |
| Combined | 96 | 0 | 0 | 76 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Appendicular skeleton | 2-[18F]FDG-PET-MRI | 52 | 8 | 0 | 198 | 86.7 | 100.0 | 100.0 | 96.1 | 96.9 |
| DW-MRI | 57 | 3 | 0 | 198 | 95.0 | 100.0 | 100.0 | 98.5 | 98.8 |
| Combined | 60 | 0 | 0 | 198 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Abbreviations: 2-[18F]FDG-PET-MRI: 2-[18F]fluoro-2-deoxy-D-glucose enhanced positron emission tomography-magnetic resonance imaging, DW-MRI: Diffusion weighted-magnetic resonance imaging, TP: true positive, FN: false negative, FP: false positive, TN: true negative, PPV: positive predictive value, NPV: negative predictive value