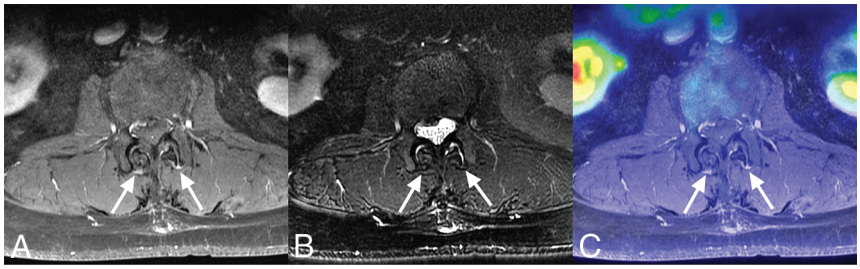
On-line Table 1: MR imaging parameters

Parameter	Fast Spin-Echo Sequence[a]					
	Sagittal T1	Sagittal T2 with Fat Saturation	Sagittal T1 with Fat Saturation and Gadolinium	Axial T1	Axial T2 with Fat Saturation	Axial T1 with Fat Saturation and Gadolinium
TR (ms)[b]	550–742	3891–5749	550–811	736–883	5196–5577	700–888
TE (ms)[b]	8.3–9.1	101.1–105.1	8.3–8.9	8.7–9.2	102.5–108	8.7–9.5
Section thickness (mm)	4	4	4	5	5	5
NEX	1	2	1.5	1	2	1.5
Echo-train length	2	23	2	4	23	3
FOV (mm)	280 × 280	280 × 280	280 × 280	180 × 180	180 × 180	180 × 180
Image size (pixels)	512 × 512	512 × 512	512 × 512	512 × 512	512 × 512	512 × 512

[a] Sequences were performed without fat saturation unless otherwise specified.
[b] Some values varied slightly between patients, and the range is provided.

On-line Table 2: Comparison of clinical features and imaging findings on each side of the low back

Subject	Clinical Confidence, Right	Clinical Confidence, Left	Tenderness, Right	Tenderness, Left	Positive Loading Maneuver	High MRI Score and/or FDG Activity, Right	High MRI Score and/or FDG Activity, Left
1	80%–100%	60%–80%	Yes	Yes	Yes	No	No
2	Not suspected	80%–100%	No	Yes	Yes	No	Yes
3	60%–80%	60%–80%	Yes	Yes	No	Yes	Yes
4	60%–80%	60%–80%	Yes	Yes	Yes	Yes	Yes
5	60%–80%	Not suspected	No	No	No	No	Yes
6	80%–100%	80%–100%	Yes	Yes	Yes	No	No
7	80%–100%	Not suspected	Yes	No	Yes	Yes	No
8	80%–100%	Not suspected	Yes	Yes	Yes	Yes	Yes
9	80%–100%	80%–100%	No	No	Yes	Yes	Yes
10	60%–80%	60%–80%	Yes	Yes	No	Yes	No

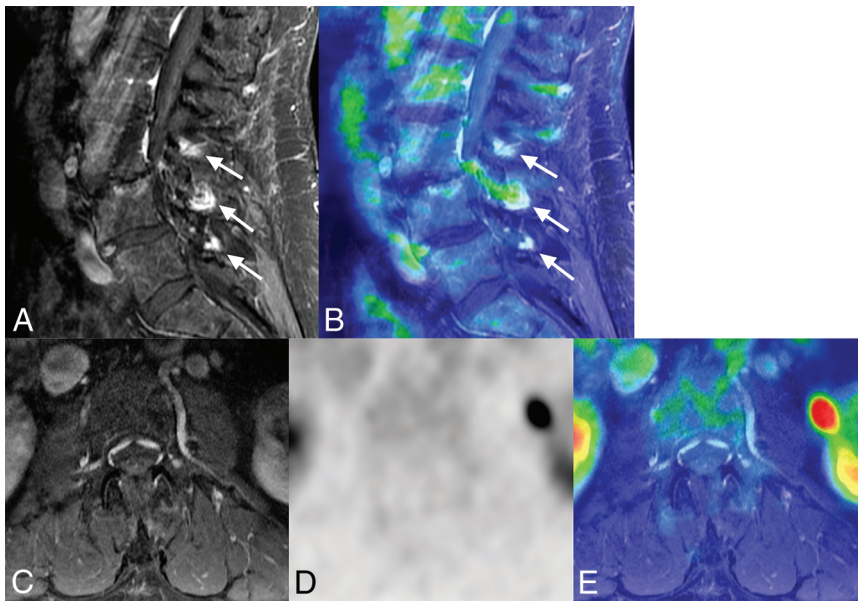


ON-LINE FIG 1. Low-grade perifacet enhancement with normal T2 signal and FDG activity. An axial fat-suppressed T1-weighted image with gadolinium demonstrates low-grade enhancement of the bilateral L1–L2 facet joint capsule posteriorly (*arrows*, *A*). No signal abnormality is discernable in this region on an axial fat-suppressed T2-weighted image (*arrows*, *B*), and no substantial FDG activity near the area of enhancement is evident on a fused PET/MR image (*arrows*, *C*).

On-line Table 3: Comparison of planned treatment, imaging findings, clinical concordance, and potential to change management with a hypothetical biomarker-directed treatment prescription

Subject	Planned Treatment	MRI-Positive (Grades per Facet, Bone)	FDG-Positive (Grade)	Clinically Concordant to Right Side	Clinically Concordant to Left Side	No Change[a] (No.)	Newly Treated[b] (No.)	Treatment Averted[b] (No.)
1	L5–S1 R L5–S1 L	None	None	No	No	0/2	0	2/2
2	L4–L5 L L5–S1 L	L4–L5 L (III, 0) L5–S1 L (III, 0)	L4–L5 L (I) L5–S1 L (I)	Yes	Yes	2/2	0	0/2
3	L4–L5 R L4–L5 L L5–S1 R L5–S1 L	L3–L4 R (IV, II) L3–L4 L (IV, III)	L3–L4 R (III) L3–L4 L (III)	Yes	Yes	0/4	2	4/4
4	L4–L5 R L4–L5 L L5–S1 R L5–S1 L	L5–S1 R (IV, II) L5–S1 L (IV, III)	L5–S1 R (II) L5–S1 L (III)	Yes	Yes	2/4	0	2/4
5	None (pain on right)[c]	L4–L5 L (III, 0)	L4–L5 L (I)	No	No	0/0	1	0/0
6	L4–L5 R L4–L5 L L5–S1 R L5–S1 L	None	None	No	No	0/4	0	4/4
7	L1–L2 R L2–L3 R	L2–L3 R (III, 0) L3–L4 R (IV, I) L4–L5 R (III, I)	L2–L3 R (I) L3–L4 R (II)	Yes	Yes	1/2	2	1/2
8	L3–L4 L L4–L5 L L5–S1 L	L2–L3 R (III, 0) L3–L4 R (III, II) L4–L5 R (III, 0) L4–L5 L (III, 0)	L2–L3 R (I) L4–L5 R (I) L4–L5 L (II)	No	Yes	1/3	3	2/3
9	L4–L5 R L4–L5 L L5–S1 R L5–S1 L	L3–L4 R (III, III) L3–L4 L (III, III) L4–L5 R (III, III) L4–L5 L (III, III)	L3–L4 R (I) L3–L4 L (I) L4–L5 R (I) L4–L5 L (I)	Yes	Yes	2/4	2	2/4
10	L4–L5 R L4–L5 L L5–S1 R L5–S1 L	L3–L4 R (II, III) L4/L5 R (I, III) L5–S1 R (IV, III)	L5–S1 R (II)	Yes	No	2/4	1	2/4
Total	29	21	17	6	6	10	11	19

[a] Considers facet joints designated for planned treatment.
[b] Based on assumption that high-grade MR imaging/FDG findings positive for increased activity are biomarkers in the theoretic new image-directed treatment plan.
[c] Clinical plan of physical therapy; specific levels for treatment are not identified.



ON-LINE FIG 2. Partially concordant clinical and imaging findings for implicated facet joints. Both sides were concordant, with pain on the right but not the left. Clinically, the right L1–L2 and L2–L3 facet joints were initially prescribed treatment. MR imaging demonstrates high-grade perifacet enhancement on the right at L2–L3, L3–L4, and L4–L5, most marked about the inferior recess levels, as seen on the sagittal T1-weighted fat-suppressed postgadolinium image (*arrows*, *A*). A sagittal fused PET/MR imaging demonstrates increased FDG activity of these facet joints, most marked at L3–L4 (*arrows*, *B*). There is no increased FDG activity or high-grade MR imaging scores on the left (not shown). Axial T1-weighted fat-suppressed postgadolinium image at the L1–L2 level (*C*), one of the originally implicated levels clinically, demonstrates no increased perifacet enhancement. There is also no increased FDG activity at the L1–L2 level on corresponding PET or fused PET/MR images (*D* and *E*).