SUPPLEMENTAL TABLE 1. 11C-MET-PET scan frequency and timing

Time Point	No. of 11C-MET-PET Scans	No. (%) of Positive 11C-MET-PET Scans
Diagnosis	22	18 (82%)
Surveillance 1	17	15 (88%)
Surveillance 2	3	3 (100%)
Surveillance 3	1	1 (100%)
Total	43	37 (86%)
MRI and 11C-MET-PET Interval	**Median (days)**	**IQR (days)**
Diagnosis	6.0	4.0–7.8
Surveillance 1	1.0	1.0–5.0
Surveillance 1 Interval (N = 12)	**Median (days)**	**IQR (days)**
End RT to Surveillance 1 PET	32.5	23.8–41.0

RT, radiation therapy

SUPPLEMENTAL TABLE 2: Patient, treatment, and outcome characteristics.

Characteristic		N	% or Median (IQR)
Age @ RT		22	9.3 y (6.8–13.5 y)
Sex	Male	11	50.0%
	Female	11	50.0%
Race	Black	3	13.6%
	White	19	86.4%
Biopsy	No	15	68.2%
	Yes	7	31.8%
Radiotherapy	No	0	0%
	Yes	22	100%
	Total dose	22	54 Gy (range, 54–55.8 Gy)
Concurrent chemotherapy-RT	No	4	18.2%
	Yes	18	81.8%
Adjuvant-only chemotherapy	No	20	90.9%
	Yes	2	9.1%
Progression*	No	1	4.8%
	Yes	20	95.2%
Time from RT start to progression	Months	20	8.6 (5.2–10.6)
Death*	No	3	14.3%
	Yes	18	85.7%
Time from RT start to death	Months	18	13.7 (7.7–21.4)

IQR, interquartile range; RT, radiation therapy; *one patient lost to follow-up

SUPPLEMENTAL TABLE 3. Selected baseline imaging and clinicopathologic study characteristics.

Patient	Age (y)	Sex	Clinical Dx	MRI +Gd	11C-MET-PET Intensity	11C-MET-PET Uniformity	Path Dx, WHO grade	Tissue Source	Failure Type	PFS (mo)	OS (mo)	Vital Status
1	10	Female	DIPG	No	2 (Negative)	NA	GBM, IV	Autopsy	Distant	10.1	11.1	DOD
2	5	Female	A-DIPG	No	3	1	NA	NA	Local	1.3	2.2	DOD
3	14	Female	DIPG	No	2 (Negative)	NA	NA	NA	Local	8.9	17.4	DOD
4	2	Male	DIPG	Yes	3	1	NA	NA	Local	15.0	19.3	DOD
5	13	Male	DIPG	No	3	1	NA	NA	Local	5.3	7.5	DOD
6	15	Male	A-DIPG	No	3	1	AA, III	Biopsy	Local	4.8	7.5	DOD
7	9	Female	DIPG	Yes	3	2	NA	NA	Local	4.7	12.5	DOD
8	13	Male	A-DIPG	Yes	3	1	HGG, NOS	Biopsy	Local	20.9	27.3	DOD
9	8	Male	A-DIPG	No	3	1	DA, II	Biopsy	None	NA	NA	AWOD
10	16	Female	A-DIPG	No	3	2	DA, II	Biopsy	Local	50.7	59.1	DOD
11	17	Female	DIPG	No	3	1	GBM, IV	Spine Met	Distant	9.2	35.8	DOD
12	8	Female	DIPG	Yes	3	3	NA	NA	Local	4.6	8.0	DOD
13	7	Male	DIPG	No	2 (Negative)	NA	GBM, IV	Autopsy	Local	6.1	6.2	DOD
14	2	Female	DIPG	No	1 (Negative)	NA	NA	NA	Local	8.3	23.8	DOD
15	8	Male	A-DIPG	Yes	3	4	GBM, IV	Biopsy	Unknown	NA	NA	LTFU
16	6	Male	A-DIPG	Yes	3	3	AA, III	Biopsy	L+D	6.8	8.5	DOD
17	4	Female	DIPG	No	3	1	NA	NA	Local	10.5	22.0	DOD
18	7	Female	DIPG	Yes	3	2	NA	NA	Local	5.1	6.7	DOD
19	6	Male	DIPG	No	3	2	NA	NA	Local	6.1	18.3	DOD
20	9	Male	DIPG	Yes	3	1	NA	NA	Local	12.4	14.9	DOD
21	15	Female	A-DIPG	No	3	1	DMG, H3 K27M	Biopsy	Local	10.6	NA	AWD
22	10	Male	DIPG	No	3	1	NA	NA	Local	9.1	NA	AWD

Dx, diagnosis; +Gd, contrast enhancement; Path, pathologic; WHO, World Health Organization; PFS, progression-free survival; OS, overall survival; A-DIPG, atypical DIPG; GBM, glioblastoma; AA, anaplastic astrocytoma; HGG NOS, high-grade glioma, not otherwise specified; DA, diffuse astrocytoma; DMG, diffuse midline glioma; L+D, local and distant; DOD, died of disease; AWOD, alive without disease; LTFU, lost to follow-up; AWD, alive with disease; NA, not applicable

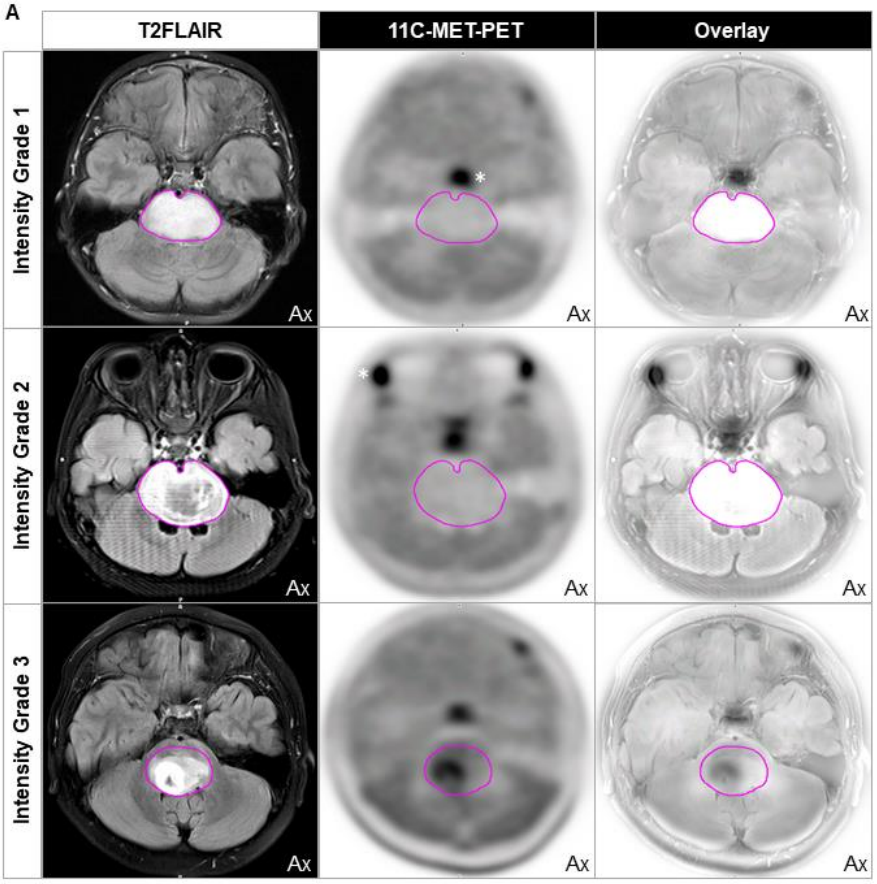
SUPPLEMENTAL TABLE 4. Change in imaging modality–defined tumor volume and 11C-MET-PET–delineated tumor maximum standardized uptake value (SUV_{max}) over time for enrolled patients.

Imaging Modality/ Sequence	N	Baseline Scans		N	1st Surveillance Scans		Median % Volume Change
		Median Volume (mL)	IQR		Median Volume (mL)	IQR	
(+) 11C-MET-PET	18	6.8	2.2–14.4	15	17.3	13.9–22.8	(+) 157.9
(+) MRI T1post	8	4.5	3.7–8.2	10	5.6	1.8–12.3	(+) 25.7
MRI T2FLAIR	22	33.3	26.2–41.0	17	19.0	12.0–26.6	(−) 42.9

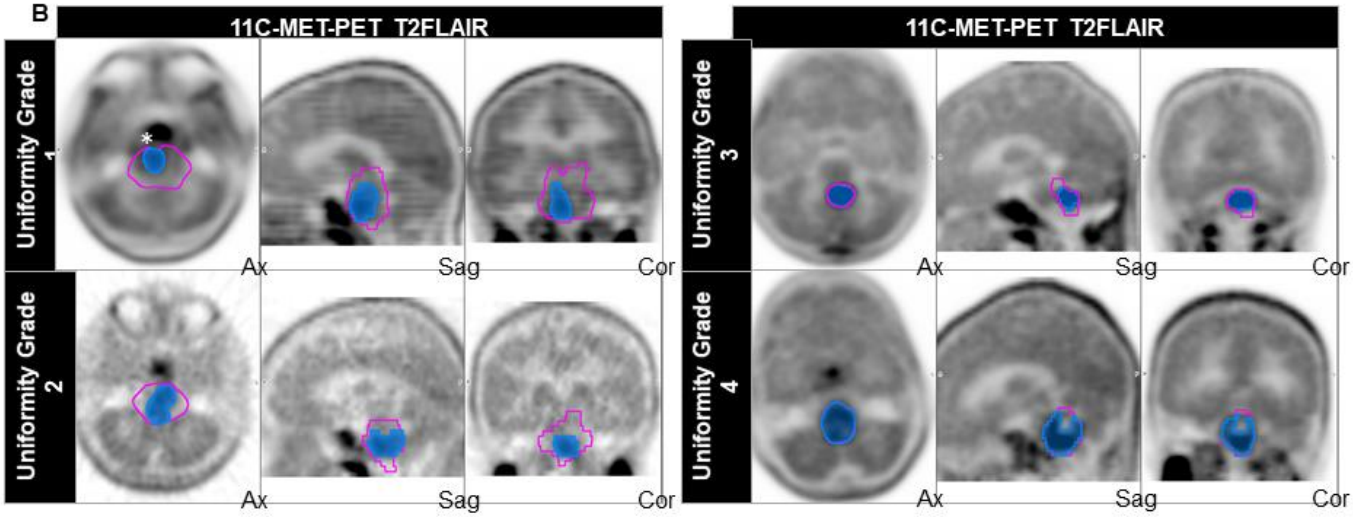
Imaging Modality	N	Baseline Scans		N	1st Surveillance Scans		Median % SUV_{max} Change
		Median SUV_{max}	IQR		Median SUV_{max}	IQR	
(+) 11C-MET-PET	18	2.0	1.7–2.5	15	2.7	2.2–3.5	(+) 36.3

mL, milliliters; IQR, interquartile range; (+) 11C-MET-PET, uptake above that in uninvolved brain; (+) MRI T1post, T1-weighted MRI with contrast enhancement.

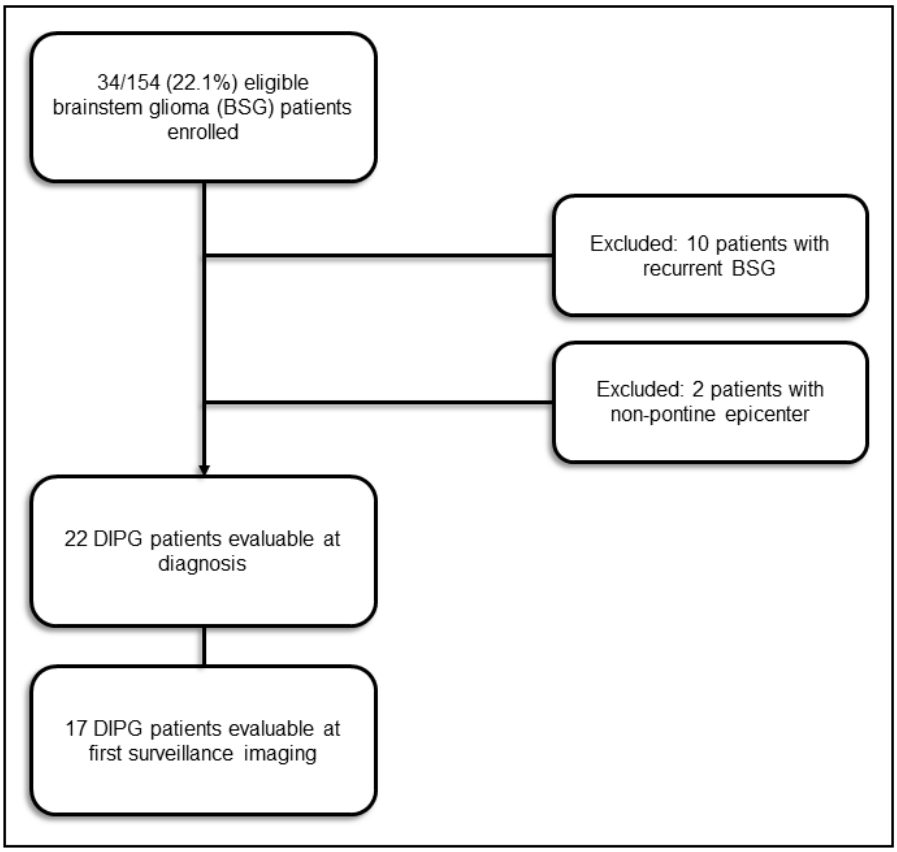
Supplemental Figure 1.
Examples of the grading scheme for intensity and uniformity of 11C-MET uptake by pediatric DIPG. (A) Intensity scale for 11C-MET uptake with co-registered MRI and 11C-MET-PET images and the respective overlay images (magenta, T2FLAIR-delineated tumor volume). Examples of grade I (uptake less than in normal brain tissue), grade 2 (uptake equal to that in normal brain tissue), and grade 3 (uptake greater than in normal brain tissue). *Physiologic uptake in exocrine glands.



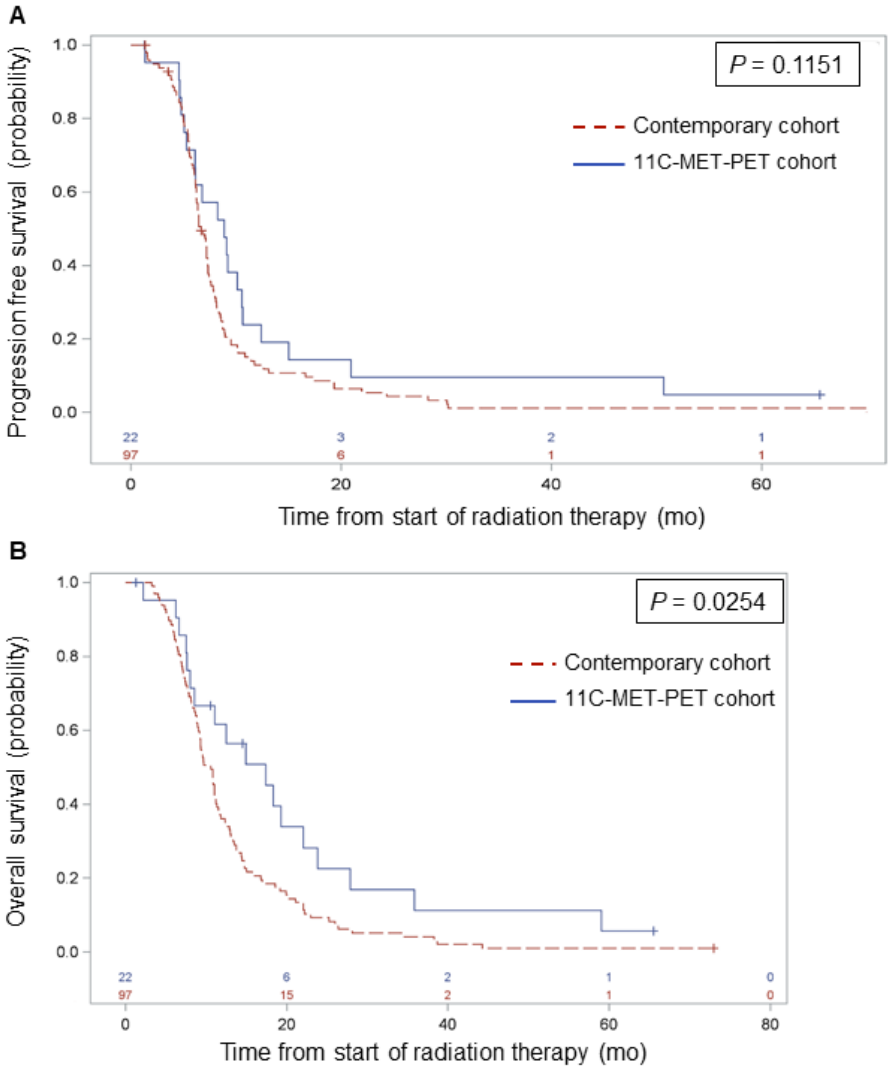
Supplemental Figure 1 Continued. (B) Uniformity of 11C-MET relative to co-registered MRI T2FLAIR–defined tumor volume (magenta). Examples of grade 1 (percentage of tumor demonstrating 11C-MET uptake of less than 25%), grade 2 (percentage of tumor demonstrating 11C-MET uptake of 25%–49%), grade 3 (percentage of tumor demonstrating 11C-MET uptake of 50%–74%), and grade 4 (percentage of tumor demonstrating 11C-MET uptake of 75% or greater). *Physiologic uptake in exocrine glands.



Supplemental Figure 2. Consort diagram of diffuse intrinsic pontine glioma (DIPG) 11C-MET-PET study.



Supplemental Figure 3. Progression-free survival (PFS) (A) and overall survival (OS) (B) estimates for patients in this 11C-MET-PET study (blue solid line) compared to those for our institutional contemporary DIPG cohort who did not undergo 11C-MET-PET evaluation (red dashed line). OS was significantly prolonged compared to that of contemporary controls, whereas no significant differences in PFS were observed.



Supplemental Figure 4: Example of the coincidence of a recurrent DIPG and the initial 11C-MET-PET segmented tumor volume (shaded blue, bottom left) based on co-registered MRI and 11C-MET-PET–defined tumor. Shown are T2FLAIR (magenta) and T1post (red) abnormalities on MR images at progression, along with 11C-MET abnormality (yellow) on 11C-MET-PET at diagnosis. Dx, diagnosis; Rec, recurrence. *Physiologic uptake in exocrine glands.