Supplementary Table 1. Patient characteristics

Patient No.	treated with Pom after CAR T-cells infusion	Sex	Age (years)	Subtype	R-ISS Stage at the diagnosis	Cytogenetic abnormalities	Prior lines of therapy	Prior ASCT	Abnormal myeloma cells in BM by FCM (%)	EMD	Diseases status before CART therapy	Entry date
1	Y	M	67	IgG λ	II	N	3	Y	$<10^{-4}$	Soft tissue in chest	PD	2022.1.5
2	Y	F	57	IgG κ	III	1q21 amplification, RB1 deletion, D13S319 deletion, P53 deletion, and a complex karyotype	5	N	1.61%	N	PD	2021.1.16
3	Y	M	71	IgG κ	III	N	4	Y	$<10^{-4}$	Soft tissue in chest	PD	2021.5.30
4	Y	M	59	IgG κ	III	IGH re-arrangement	3	N	2.56%	N	PD	2022.1.4
5	Y	F	55	κ light chain	II	N	4	Y	60%	N	PD	2018.3.9
6	Y	F	46	IgA λ	III	1q21 amplification, RB1 deletion, D13S319 deletion, IGH re-arrangement, t(4;14)	5	Y	34%	Central nervous system	PD	2022.7.4
7	Y	F	52	IgG λ	II	N	4	Y	$<10^{-4}$	Liver	PD	2021.3.23
8	Y	F	55	IgA κ	III	1q21 amplification, RB1 deletion, D13S319 deletion, IGH re-arrangement	3	N	4%	Subcutaneous soft tissue above symphysis pubis	PD	2021.4.7
9	N	F	58	IgG κ	II	N	4	Y	15.33%	N	PD	2017.12.5
10	N	F	64	IgG λ	III	1q21 amplification, RB1 deletion, D13S319 deletion, IGH re-arrangement	3	N	5.5%	N	PD	2018.5.15
11	N	M	65	λ light chain	NA	N	4	Y	9.5%	N	PD	2018.1.3
12	N	F	45	IgD λ	III	N	3	Y	$<10^{-4}$	Central nervous system	PD	2017.12.7
13	N	M	60	IgG κ	II	N	6	N	1.5%	N	PD	2017.11.14
14	N	M	61	Non-secretory	NA	P53 deletion	4	Y	92%	N	PD	2018.1.7
15	N	F	53	IgA λ	III	N	3	Y	7.5%	N	PD	2018.3.24
16	N	F	44	Non-secretory	III	RB1 deletion, P53 deletion	3	N	28%	Intraspinal tissue (T12 to L4)	PD	2018.5.4

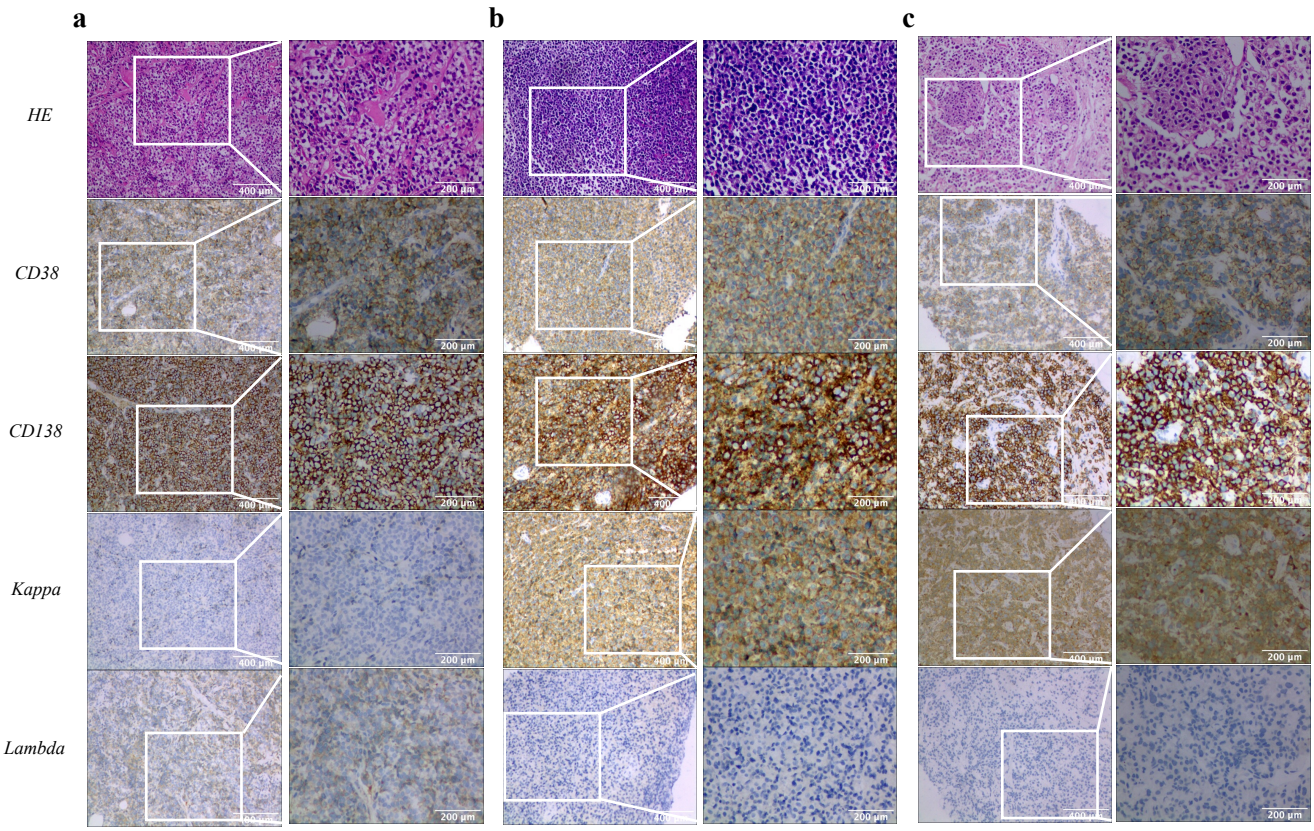
Abbreviation: R-ISS, Revised International Staging System for Multiple Myeloma; ASCT, autologous stem cell transplantation; FCM, flow cytometry; NA, not applicable; EMD, extramedullary disease; PD, progressive disease.

Supplementary Table 2. Prior treatments before BCMA CAR-T-cell infusion

Patient No.	treated with Pom after CAR T-cells infusion	Prior treatments
1	Y	5VCD+ASCT+VD+2RD+IRD+IPD
2	Y	4VRD+VD+ IT+ICD+IRD+DPD
3	Y	3VRD+IRD+2VPD+DT-PACE+ASCT
4	Y	4VCD+IRD+DVD
5	Y	4VCD+ASCT+VRD+IRD+DPD
6	Y	VRD+3VAD+3D-VCD+2KPD+ASCT
7	Y	4VTD+2VAD+MP+VAD+ASCT+clinical trial treatment
8	Y	2VD+2VCD+VAD/R+RD
9	N	4VTD+2VAD+MP+VAD+ASCT+clinical trial treatment
10	N	2VD+2VCD+VAD/R+RD
11	N	VD+VCD+VD+2VCD+VAD/R+2RD+ASCT
12	N	4VTD+ASCT+VAD+DPD
13	N	2VAD+3CAD+2CHOP+CAD+CTD+VDT+BD
14	N	4VCD+2VRD+ASCT+DRD+IRD+KRD
15	N	6VCD+ASCT+2RD+2IRD
16	N	2VAD/CTX+2RD+local radiotherapy+DT-PACE

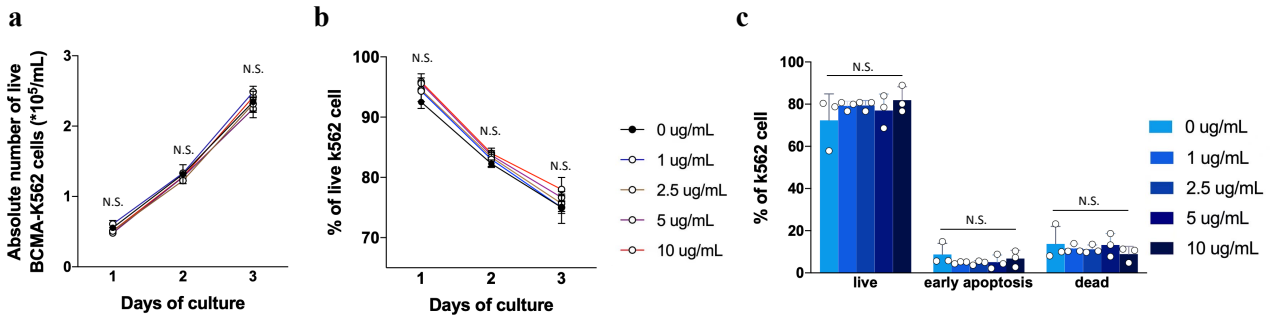
Abbreviation: VCD, V, bortezomib, C, cyclophosphamide, D, dexamethasone; RD: R, lenalidomide, D, dexamethasone; IRD: I, ixazomib, R, lenalidomide, D, dexamethasone; IPD: I, ixazomib, P, pomalidomide, D, dexamethasone; VRD: V, bortezomib, R, lenalidomide, D, dexamethasone; DPD: D, daratumumab, P, pomalidomide, D, dexamethasone; IT: I, ixazomib, T, thalidomide; ICD: I, ixazomib, C, cyclophosphamide, D, dexamethasone; VPD: V, bortezomib, P, pomalidomide, D, dexamethasone; D-VCD: D, daratumumab, V, bortezomib, C, cyclophosphamide, D, dexamethasone; DVD: D, liposomal doxorubicin, V, vincristine, D, dexamethasone; VTD: V, bortezomib, T, thalidomide, D, dexamethasone; VAD: V, bortezomib, A, doxorubicin, D, dexamethasone; MP: M, melphalan, P, prednisone; VAD/R: V, vincristine, A, doxorubicin, D, dexamethasone, R, lenalidomide; VAD/C: V, vincristine, A, doxorubicin, D, dexamethasone, C, cyclophosphamide; CAD: C, cyclophosphamide, A, doxorubicin, D, dexamethasone; CTD: C, cyclophosphamide, T, thalidomide, D, dexamethasone; CHOP: C, cyclophosphamide, H, doxorubicin, O, vincristine, P, prednisone; VDT: V, bortezomib, T, thalidomide, D, dexamethasone; DRD: D, daratumumab, R, lenalidomide, D, dexamethasone; KRD: K, carfilzomib, R, lenalidomide, D, dexamethasone; DT-PACE: D, dexamethasone, T, thalidomide, P, cisplatin, A, doxorubicin, C, cyclophosphamide, E, etoposide; ASCT: autologous stem cell transplantation.

Supplementary Figure 1



Supplementary Figure 1. Confirmation of extramedullary lesions of some multiple myeloma patients by pathological assessment. (**a**) Pathological sections of the subcutaneous mass on the chest wall of patient 1. Hematoxylin-eosin staining images at 200x magnification and at 400x magnification are presented. Immunohistochemistry of the extramedullary lesion showed diffuse infiltration by monoclonal plasma cells that were positive for CD38, CD138, and lambda-chain but negative for kappa-chain. (**b, c**) Pathological sections of soft tissue masses adjacent to the scapular bone (**b**) and on the chest wall (**c**) of patient 3. Hematoxylin-eosin staining images at 200x and 400x magnification are shown. Immunohistochemistry analysis of mass sections indicated a wide distribution of monoclonal plasma cells that were positive for CD38, CD138, and kappa-chain but negative for lambda-chain.

Supplementary Figure 2



Supplementary Figure 2. Pomalidomide showed no direct killing activity against BCMA-expressing K562 (BCMA-K562) cells. The BCMA-positive K562 cell line was cultured in vitro for 4 days and treated with pomalidomide at different concentrations. (**a**) The absolute numbers of live BCMA-K562 cells during culture were monitored by trypan blue staining. (**b**) The percentages of live BCMA-K562 cells were further calculated. (**c**) After four days of pomalidomide treatment at the indicated concentrations, BCMA-K562 cells were processed for apoptosis analyses by FACS. Experiments were performed three times, and similar results were obtained in each experiment. The results shown are the mean ± S.D. of triplicates from one experiment.