Table S1. The clinicopathological characteristics of 161 IDC patients.

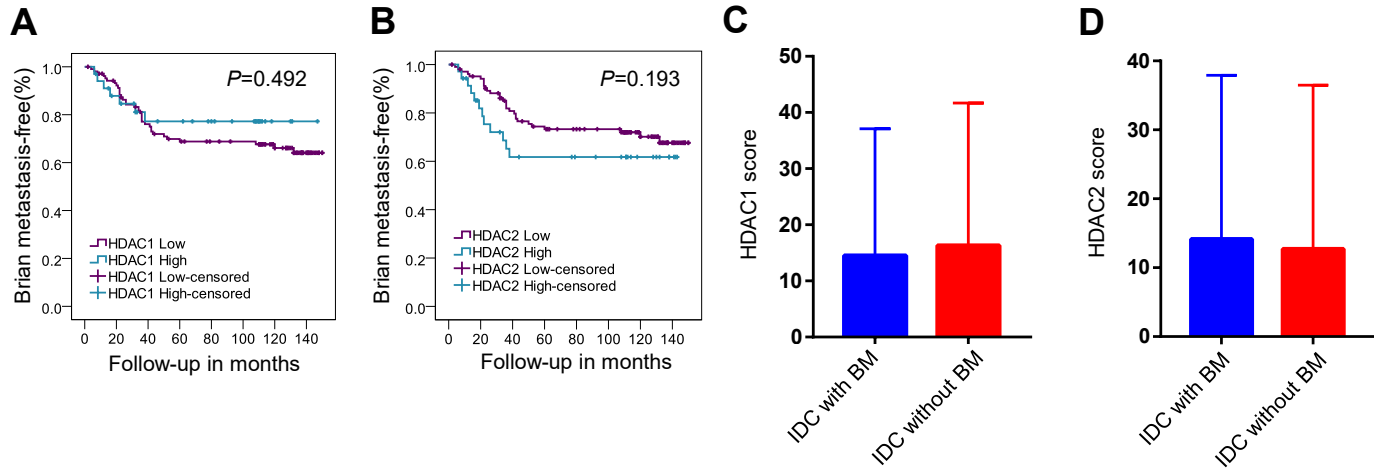| Variables	Patients without BM, n (%)	Patients with BM, n (%)
Age, y		
<48	40(40.8)	35(55.6)
≥48	58(59.2)	28(44.4)
Tumor size, cm[†]		
≤2	19(19.4)	8(13.8)
2-5	67(68.4)	31(53.4)
>5	12(12.2)	19(32.8)
Lymph node status[†]		
Negative	38(38.8)	20(32.8)
Positive	60(61.2)	41(67.2)
Histological grade[†]		
I	13(13.3)	0(0)
II	78(79.6)	33(55.0)
III	7(7.1)	27(45.0)
Molecular subtypes[†]		
Luminal	80(81.6)	30(51.7)
HER2 overexpression	7(7.1)	11(19.0)
Triple negative	11(11.2)	17(29.3)
Number of brain metastases[†]		
Single	/	20(36.4)
Multiple	/	35(63.6)
Meningeal metastasis complication[†]		
No	/	44(74.6)
Yes	/	15(25.4)
CNS surgery		
No	/	14(22.2)
Yes	/	49(77.8)
CNS radiotherapy[†]		
No	/	17(28.8)
Yes	/	42(71.2)

[†]some data were missing.

Figure S1. HDAC1 & HDAC2 exhibited no statistically significant correlation with brain metastasis of IDC patients. (A)-(B): Brain metastasis-free survival (BMF) curves of 139 IDC patients with different HDAC1(A) and HDAC2(B) levels. *P* value of the Kaplan-Meier plots in (A)-(B) were calculated by log-rank test in SPSS. **(C)-(D)**: HDAC1 (C) and HDAC2 (D) IHC scores of IDC patients with BM (n=41) and without BM(n=98) were compared quantitatively and shown by mean $\pm$ SD visually. *P* value of (C)-(D) were calculated by unpaired t test with Welch's correction, both *P* > 0.05.
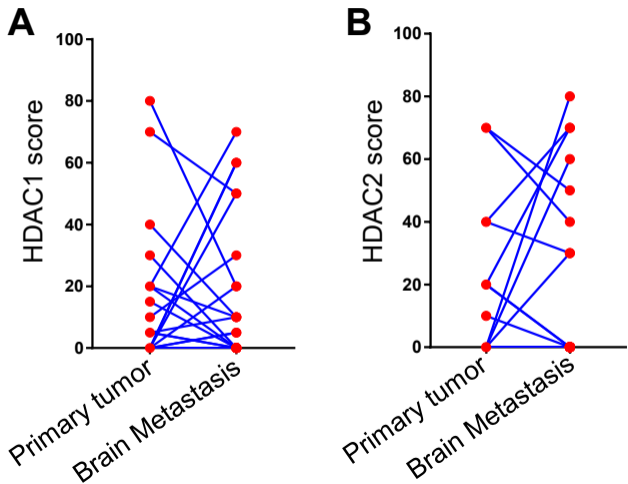
Figure S2. There were no significant differences of HDAC1 & HDAC2 expression between primary tumors and brain metastases of IDC patients.

(A)-(B): HDAC1(A) and HDAC2(B) IHC scores of 24 primary breast tumors and matched brain metastases were shown by symbols & lines plot, and *P* values were calculated by paired t test (scores were overlapped in some cases, both *P* > 0.05).
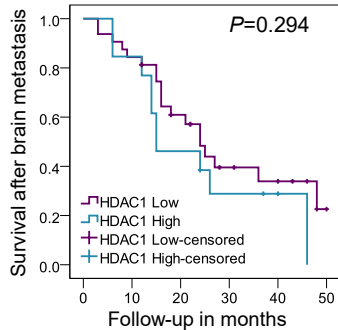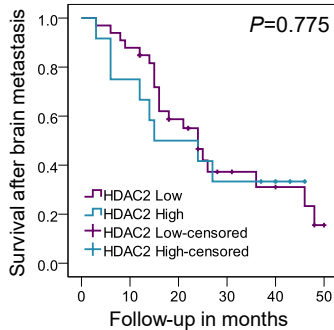
Figure S3. HDAC1 or HDAC2 expression in brain metastases was not correlated with the survival after brain metastasis of IDC patients. **(A)-(B)**:The relationship between HDAC1(A, expression of brain metastases, n=45), HDAC2(B, expression of brain metastases, n=45) and survival after brain metastasis of IDC patients were shown in corresponding Kaplan-Meier plots, and *P* value were calculated by log-rank test in SPSS.