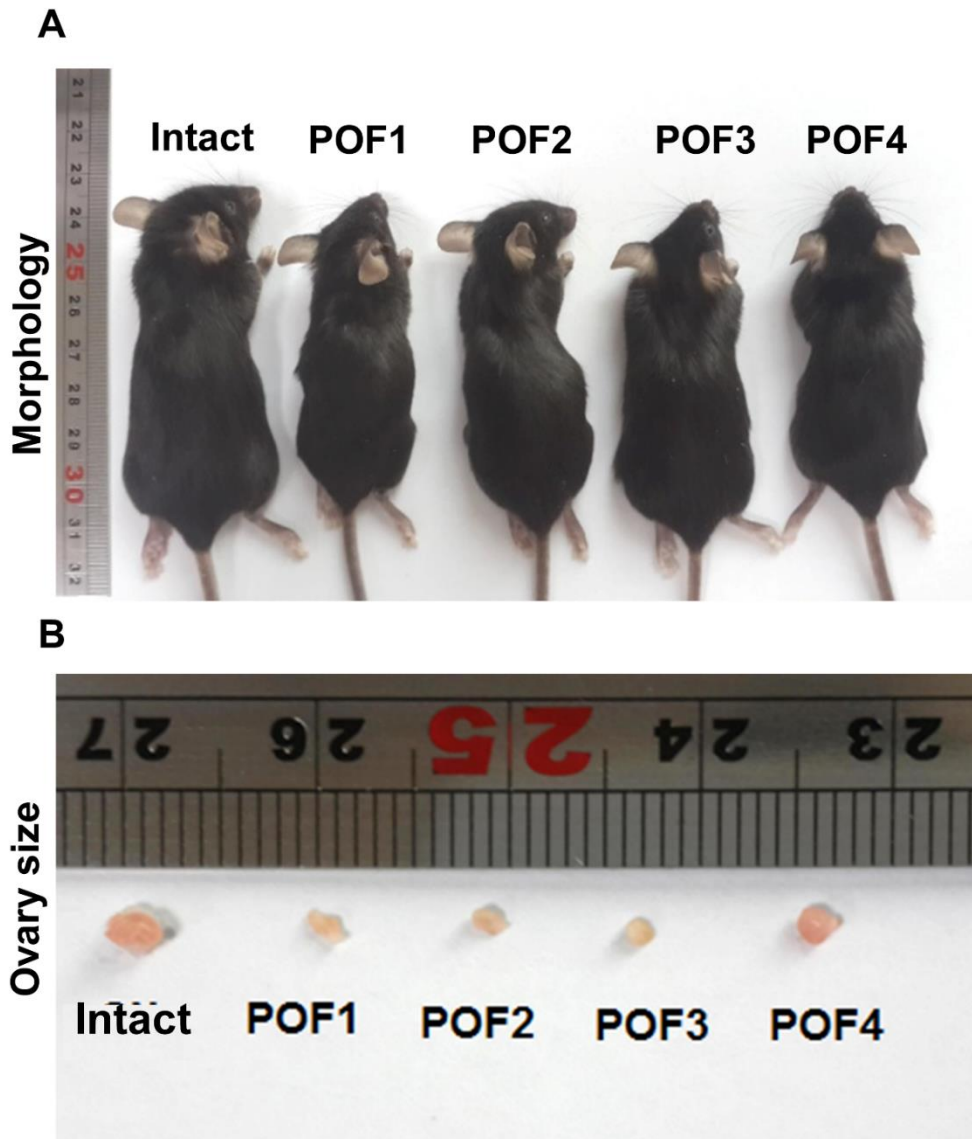
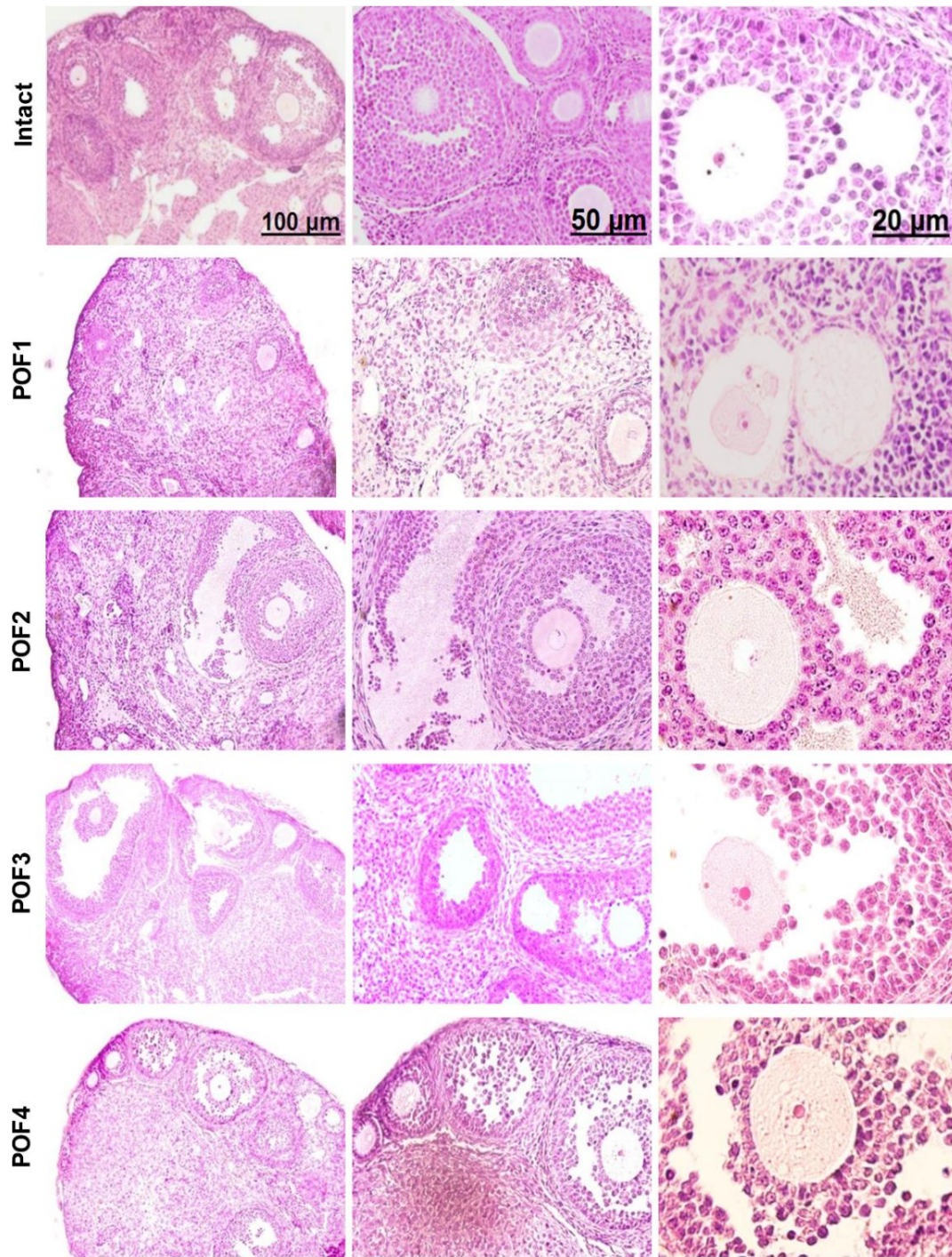


**Supplementary Figure 1 Flow cytometry analysis.** Our data showed that cultured embryonic stem cell-derived mesenchymal stem cells (ES-MSCs) and bone marrow-derived mesenchymal stem cells (BM-MSCs) expressed homing cell adhesion molecule or HCAM (CD44), cluster of differentiation 90 (CD90), cluster of differentiation 73 (CD73), and endoglin (CD105), but they did not express hematopoietic lineage markers cluster of differentiation molecule 11b (CD11b), cluster of differentiation 34 (CD34), and protein tyrosine phosphatase receptor type C (CD45).

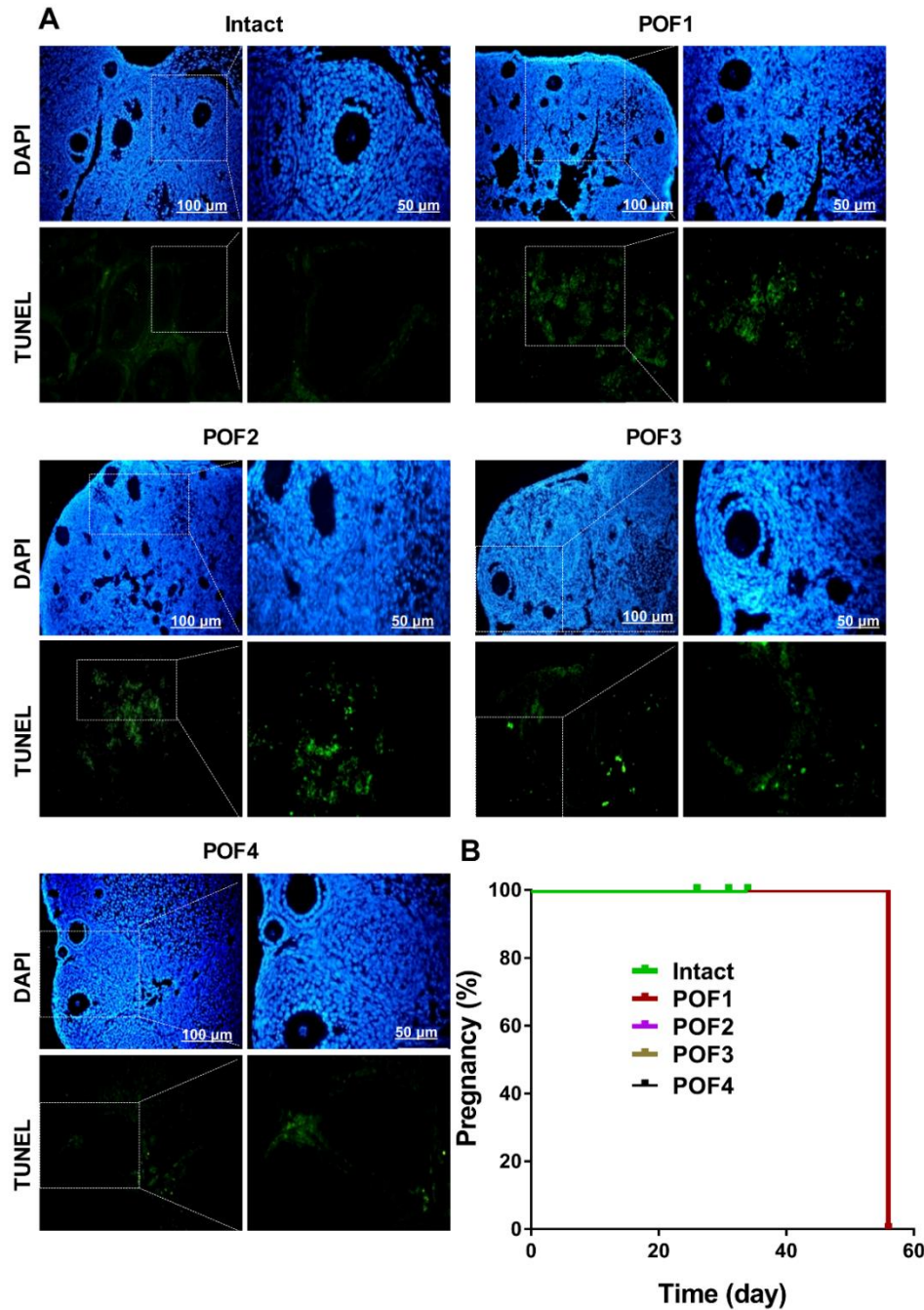


**Supplementary Figure 2 Body and ovary size after chemotherapy.** A: The body; B: ovary size in the different chemotherapy groups. POF: Premature ovarian failure.

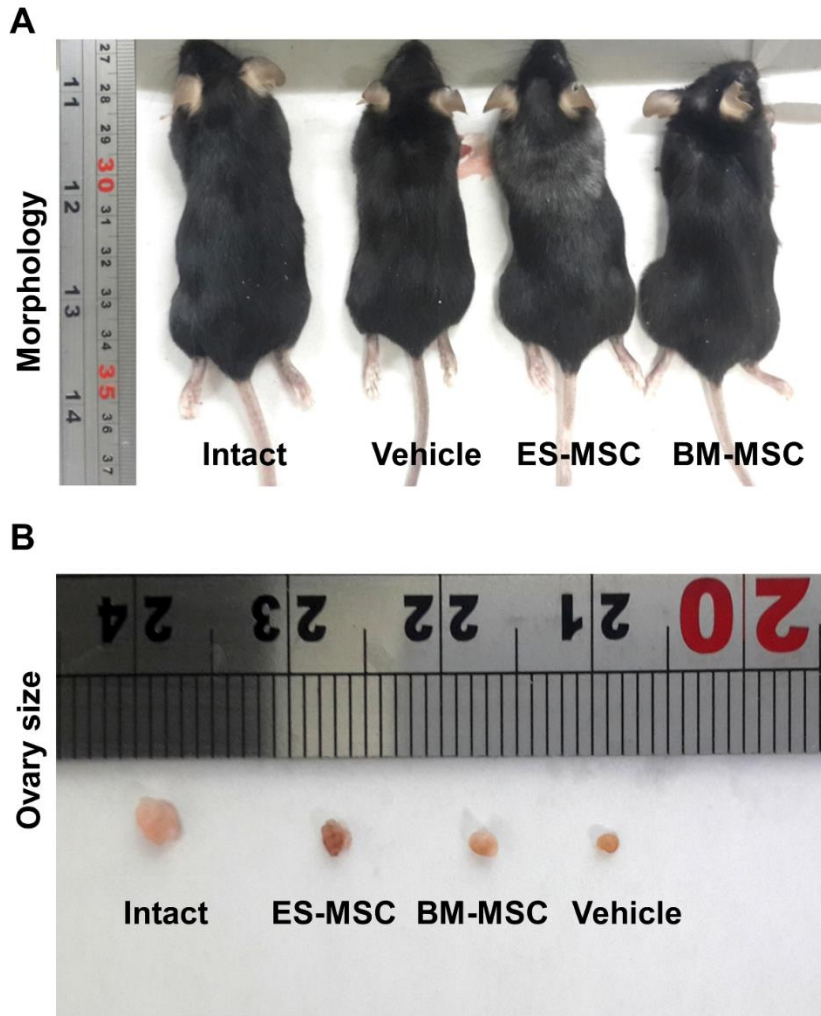


**Supplementary Figure 3 Histology of the ovaries from the intact and premature ovarian failure groups.** All sections were stained with hematoxylin and eosin. The population of follicles decreased significantly after injection with cyclophosphamide (Cy) and busulfan (Bu). POF: Premature ovarian failure.

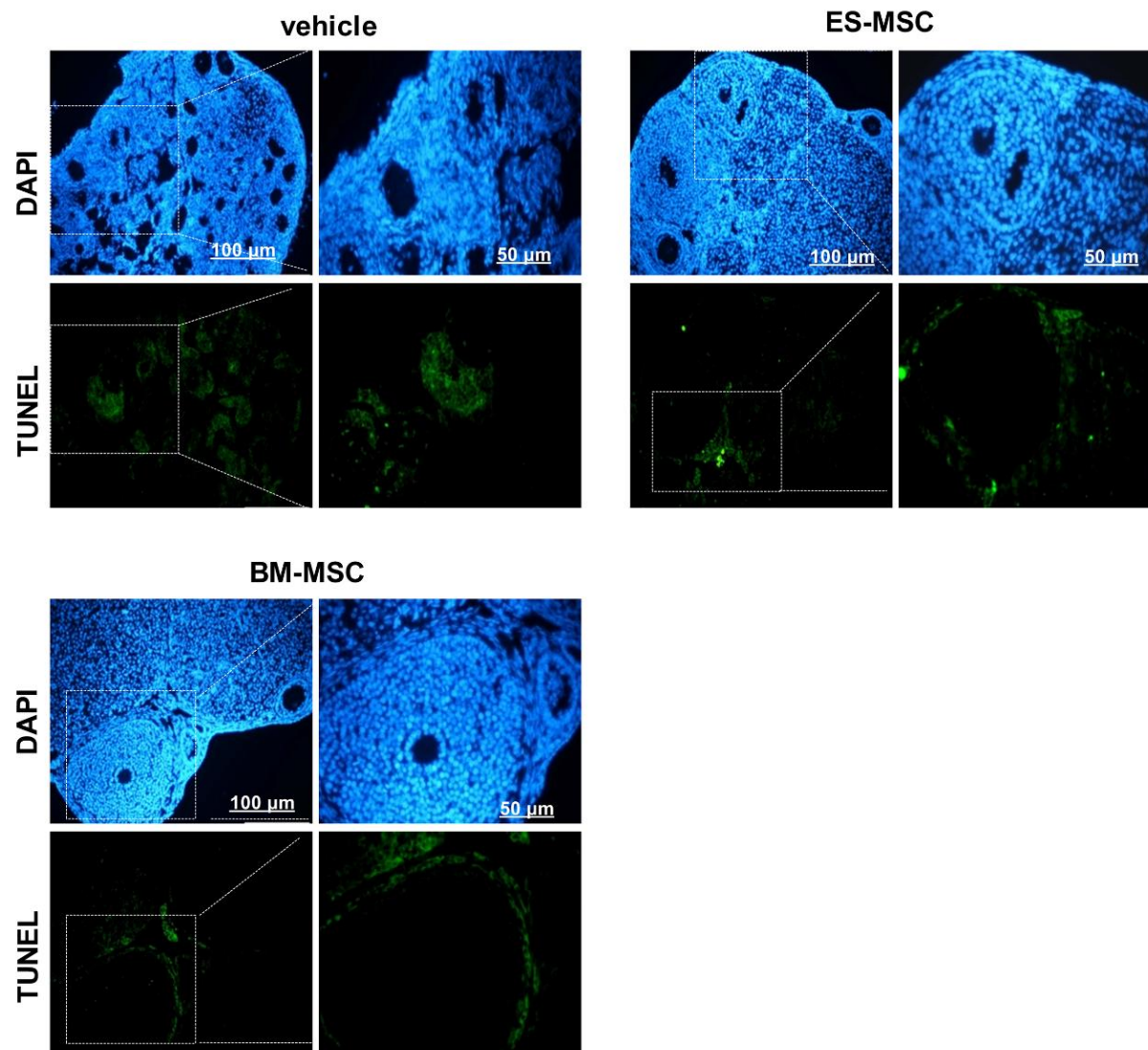




**Supplementary Figure 4 Detection of apoptosis by the TUNEL assay.** A: Cell apoptosis in the ovarian tissues of the premature ovarian failure groups was higher than the intact group; B: Pregnancy percentage in the different chemotherapy groups. POF: Premature ovarian failure.



**Supplementary Figure 5 Body and ovary size after embryonic stem cell-derived mesenchymal stem cells (ES-MSCs) and/or bone marrow-derived mesenchymal stem cells (BM-MSCs) transplantation.** A: The body; B: ovary sizes in the ES-MSCs and BM-MSCs transplanted mice were higher than in vehicle mice. ES-MSCs: Embryonic stem cell-derived mesenchymal stem cells; BM-MSCs: Bone marrow-derived mesenchymal stem cells.



**Supplementary Figure 6 Detection of apoptosis by the TUNEL assay after embryonic stem cell-derived mesenchymal stem cells and/or bone marrow-derived mesenchymal stem cells transplantation.** Cell apoptosis in ovarian tissues of the ES-MSCs and BM-MSCs transplantation groups was lower than in the vehicle group. ES-MSCs: Embryonic stem cell-derived mesenchymal stem cells; BM-MSCs: Bone marrow-derived mesenchymal stem cells.

**Supplementary Table 1 List of antibodies used in this study**

<b>Antibody</b>	<b>Company</b>	<b>Dilution</b>
CD44	eBioscience	1:100
CD73	eBioscience	1:100
CD90	Dako	1:200
CD105	R&D Systems	1:200
CD11b	BD Biosciences	1:100
CD34-45	BD Biosciences	1:200
IgG1-PE	eBioscience	1:200
IgG1-FITC	eBioscience	1:200
Amh	Gene Tex	1:100

Amh: Anti-Müllerian hormone; CD45: Protein tyrosine phosphatase receptor type C; CD90: Cluster of differentiation 90; CD73: Cluster of differentiation 73; CD44: Homing cell adhesion molecule or HCAM; CD11b: Cluster of differentiation molecule 11b; CD34: Cluster of differentiation 34; Endoglin: CD105; IgG1-PE: IgG1-phycoerythrin; IgG1-FITC: IgG1- fluorescein isothiocyanate.

**Supplementary Table 2 List of primer sequences**

<b>Gene</b>	<b>Forward</b>	<b>Reverse</b>
<i>Gapdh</i>	GACTTCAACAGCAACTCCCAC	TCCACCACCCTGTTGCTGTA
<i>Caspase-3</i>	AAAGACCATACATGGGAGC	CGAGATGACATTCCAGTGCT
<i>Bcl2</i>	GAGACTTCCCTGCTGAAAGAC	TCCAGAAGCCTTTGTTTCCTC
<i>Vegf</i>	TGAAACCATGAACTTTCTGCTC	AACTTCACCACTTCATGGGCT
<i>Igf2</i>	AGTTCTGCTGCTGCTGTATTG	CTACCTGGCTAGTCATTGG
<i>Amh</i>	CTTAACCCTTCAACCAAGCAG	TGAAACAGCGGGAATCAGAG
<i>Gdf9</i>	TGAACAACTCTGCCTCTTCC	ATGCTAAACACTCCGTCCTC

*Gapdh*: Glyceraldehyde-3-phosphate dehydrogenase; *Bcl2*: B-cell lymphoma 2; *Caspase 3*: Cysteine-aspartic proteases 3; *Vegf*: Vascular endothelial growth factor; *Igf2*: Insulin-like growth factor 2; *Amh*: Anti-Müllerian hormone; *Gdf9*: Growth/ differentiation factor 9

**Supplementary Table 3 Follicle counts after induction of premature ovarian failure**

<b>Groups</b>	<b>Mice (n)</b>	<b>Section (n)</b>	<b>Primordial (n)</b>	<b>Primary (n)</b>	<b>Preantral (n)</b>	<b>Antral (n)</b>
Intact	5	146	148	75	48	33
POF1	5	74	57	27	23	16
POF2	5	80	74	35	25	15
POF3	5	94	109	61	42	27
POF4	5	132	129	69	45	31

POF: Premature ovarian failure.

**Supplementary Table 4 Follicle counts after transplantation of mesenchymal stem cells**

<b>Groups</b>	<b>Mice (n)</b>	<b>Section (n)</b>	<b>Primordial (n)</b>	<b>Primary (n)</b>	<b>Preantral (n)</b>	<b>Antral (n)</b>
Intact	3	98	136	74	52	31
Vehicle	3	63	60	33	20	14
ES- MSCs	3	84	87	57	43	28
BM- MSCs	3	77	78	52	41	25

MSC: Mesenchymal stem cells; ES-MSCs: Embryonic stem cell-derived mesenchymal stem cells; BM-MSCs: Bone marrow-derived mesenchymal stem cells.