

MENSTRUAL BLOOD-DERIVED STEM CELL TRANSPLANTATION IMPROVES OOCYTE-GRANULOSA CELL FUNCTIONS ON PREMATURE OVARIAN INSUFFICIENCY IN RATS

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Abstract Body

Purpose

The aim of this study was to evaluate whether menstrual blood-derived stem cell (menSC) improved oocyte-granulosa cell functions by analyzing Growth Differentiation Factor (GDF)9 and Kit Ligand (KitL) expressions of cisplatin-induced premature ovarian insufficiency (POI) in rats.

Methods

In this experimental study, 36 female rats were divided into three groups: control, cisplatin and cisplatin+menSC. Intraperitoneal cisplatin 5 mg/kg body weight was administered for 1 week to induce POI. MenSC was collected and isolated from healthy female volunteers using a menstrual cup and characterized by CD73(+), CD90(+), dan CD 105(+). MenSC was injected through rat tail vein after cisplatin administration. Immunohistochemistry examinations for ovarian GDF9 and KitL were performed after 2 weeks of menSC transplantation. Levels of FSH, estradiol and AMH were examined by ELISA to confirm POI condition. Paul Karl Horan (PKH)26 fluorescent dye was used for menSC cell labeling.

Result

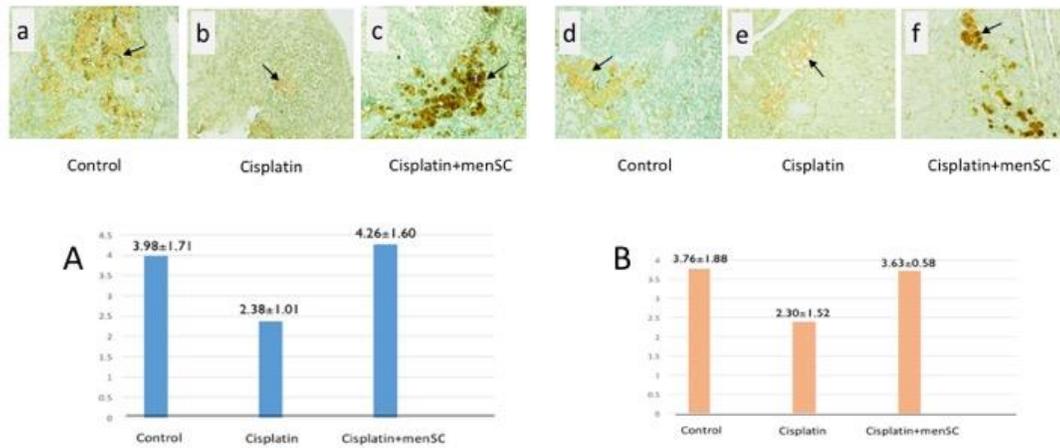
The expressions of GDF9 in control, cisplatin and cisplatin+menSC groups were as follow: 3.98 ± 1.71 ; 2.38 ± 1.01 and 4.26 ± 1.60 , respectively. There was significant different of GDF9 expression between cisplatin and cisplatin+menSC group ($p < 0.05$) but no different between control and cisplatin+menSC group ($p > 0.05$). The expressions of KitL in control, cisplatin and cisplatin+menSC groups were as follow: 3.76 ± 1.88 ; 2.30 ± 1.52 and 3.63 ± 0.58 , respectively. There was significant different of KitL expression between cisplatin and cisplatin+menSC group ($p < 0.05$) but no different between control and cisplatin+menSC group ($p > 0.05$). The state of POI was confirmed by higher level of FSH but lower level of E2 and AMH in cisplatin than control and cisplatin+menSC groups. Positive fluorescent of PKH26 was demonstrated in ovarium of cisplatin+menSC group as marker of menSC homing identification.

Conclusion

In cisplatin-induced premature ovarian insufficiency in rats, menSC transplantation improves oocyte-granulosa cell functions through increasing of GDF9 and KitL expressions.

Keywords: menstrual blood, stem cell, premature ovarian insufficiency, gdf9, kit ligand, rat

Abstract image



Upper: Immunohistochemical staining of GDF9 (a), (b), (c) and Kit Ligand (d), (e), (f) expressions in ovarium of control, cisplatin and cisplatin+menSC groups. Below: The comparison of GDF9 (A) and Kit Ligand (B) expressions between control, cisplatin and cisplatin+menSC groups

