Abnormal processing of IL-1β in NLRP7-mutated monocytes in hydatidiform mole patients

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Abstract

Background NOD-like receptor pyrin 7 (NLRP7) has been identified as the major gene responsible for the recurrent hydatidiform mole (RHM). The immunological role of NLRP7 mutation in HM patients has not been conclusively demonstrated. Hence, we aim to demonstrate this role in our study. Methods We followed 12 new patients with NLRP7 nonsynonymous variations (NSVs) from date to date. Peripheral blood mononuclear cells (PBMCs) were collected from patients with and without NLRP7 mutation, separately. Supernatant IL-1β secretion, intracellular pro-IL-1β and mature-IL-1β expressions were measured after 24h lipopolysaccharide (LPS) stimulation. Plasmids with corresponding NSVs were generated to evaluate the ability of processing pro-IL-1β into mature-IL-1β in vitro. Results Homozygous or compound heterozygous NLRP7 mutation secreted less IL-1β in root of abnormal intracellular pro-IL-1β or mature-IL-1β according to different domain defective. Plasmids with NSVs could also affect processing or/and trafficking together with caspase-1 and apoptosis-associated speck-like protein (ASC). Conclusion Inflammasome related NLRP7 mutation is a potential mechanism of RHM.

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