Hepatocellular carcinoma (HCC) is one of the most common cancers worldwide with a poor prognosis of limited survival. Human regulatory B cells (Bregs), a new subset of B cells, play an important role in autoimmune disease. However, the role of Bregs in the HCC progression and the underlying mechanisms is still unknown.

Objective

- To study the roles of Bregs in liver tumor growth and invasion
- To investigate the underneath mechanisms of Bregs regulating HCC progression

Materials and methods

- Clinic study: abundance of circulating Bregs, the distribution of B cells in tumor tissues of HCC patients and their clinical correlation.
- In vitro study: the role of Bregs on HCC growth and migration in coculture system
- In vivo study: the role of Bregs on HCC growth further using SCID mice liver cancer model

Results

1. Human intrahepatic B cells and peripheral B cell subsets participated in HCC progression.

2. Human Bregs engrafted in SCID mice and promoted tumor growth.

3. Bregs promoted proliferation and invasion of HCC cells.

4. CD154 neutralization abolished Bregs induced tumor growth.

5. Bregs interacted with HCC cells through CD40-CD154 signaling.

Conclusion

- Abundance of B cells at HCC tumor margin was associated with cancer progression.
- Circulating regulatory B cells (Bregs) were associated with HCC progression.
- Bregs promoted HCC progression through CD40-CD154 interaction in vivo and in vitro.
- Suppression of Bregs may be an appealing therapeutic strategy in the treatment of HCC.

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