Introduction

Based on the 2020 GLOBOCAN data, bladder cancer ranks as one of the ten most common cancer types throughout the world (1). Due to its high recurrence rate and the length of treatment, bladder cancer remains one of the most expensive cancers (2) to treat with no significant improvements in the standard treatment options. Human amniotic membrane (hAM) is an innermost fetal membrane, which is associated with a wide range of biological properties such as anti-inflammatory, anti-fibrotic and anti-microbial activity. Furthermore, recent studies have underlined the possibility that human amniotic membrane (hAM) might also act as a promising anti-cancer agent.

Aim

The aim of this study was to evaluate the anticancer effect of hAM homogenate on 2D and 3D cancer in vitro models.

Methods

Human muscle-invasive bladder cancerurothelial (T24) cells, papillary cancerurothelial (RT4) cells, normal porcine urethral (NPU) cells, human mammary gland nontumorigenic (MCF10a) cells and low-metastatic breast cancer (MCF7) cells were treated with hAM homogenate. The effects of the hAM homogenate on the desquamation of cancer cells, their attachment capacity, proliferation rate and spheroid architecture were evaluated.

Results

Some figures are not visible in this text. They are described in the text.

Conclusions

Human amniotic membrane has multi-targeted anticancer activity. If combined with cytotoxic anticancer drugs and applied intravesically could contribute to bladder cancer treatment by:

• promoting detachment of bladder cancer cells and preventing their re-attachment to the urothelium,
• decreasing proliferation of bladder cancer cells,
• improving targeting of bladder cancer cells without having a toxic effect on normal urothelial cells and
• improving delivery of cytotoxic agents by disrupting the structure of bladder tumors (3).