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Poly(I:C) potentiates Bacillus Calmette-Guerin immunotherapy for bladder cancer

Ayari C, Besancon M, Bergeron A, LaRue H, Bussieres V and Fradet Y

Laval University, Canada

Introduction: Non-specific immunotherapy consisting of intravesical instillation of Bacillus Calmette-Guerin (BCG) is currently the best available treatment to prevent non- muscle-invasive bladder tumor recurrence and progression. This treatment however is suboptimal, and more effective immunotherapeutic approaches are needed. Toll-like receptors (TLRs) play a major role in the activation of the immune system in response to pathogens and danger signals but also in anti-tumor responses. We previously showed that human urothelial cells express functional TLRs and respond to TLR2 and TLR3 agonists.

Objectives: The aim of the study was to analyze the potential of polyinosinic:polycytidylic acid (poly(I:C)), a TLR3 agonist, to replace or complement BCG in the treatment of non- muscle-invasive bladder cancer.

Results: We have observed that poly(I:C) had an anti-proliferative, cytotoxic, and apoptotic effect in vitro on two low-grade human bladder cancer cell lines. Poly(I:C) induced growth arrest at the G1-S transition. The combination poly(I:C)/BCG was much more effective in reducing MBT -2 tumor growth in mice than either treatment alone. It completely cured 29% of mice and also induced an immunological memory response.

Conclusion: Our study suggests that adding poly(I:C) to BCG may enhance the therapeutic effect of BCG.

Notes: