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Oncolytic immunotherapy for cancer treatment

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Tumour immunotherapy for cancer treatment has advanced recently with various approaches. Oncolytic immunotherapy is one such to be mentioned, which has emerged as the best therapeutic option as it has shown complete remission of tumours by activating the immune system locally and generating a memory in the patient’s immune system. Oncolytic immunotherapy has revolutionised cancer treatment by improving efficacy and treating many cancer patients. Oncolytic viruses provide selective replication and destruction of tumour cells and subsequent induction of anti-tumour immune response. Bacille Calmette-Guerin (BCG) therapy is already well established against the treatment of non-muscle invasive bladder cancer (NMIBC). It is a cancer seen mostly in aged people associated with symptoms, such as blood in urine, pain during urination, dark urine, frequent urination, etc. BCG is effective against NMIBC but the response is not durable in many cases. To avoid radical cystectomy in BCG-unresponsive bladder cancer patients, oncolytic immunotherapy can be performed by using coxsackievirus. The intercellular adhesion molecule 1 (ICAM-1)-targeted coxsackievirus A21 (CVA21) is a novel immunotherapeutic virus. Treatment with CVA21 is local, limited and has very few side effects. CVA21 enhances bladder cancer cell-killing by modulating the expression of the viral receptor ICAM-1 and induces immunogenic cell death; in addition, generates long-lasting protective anti-tumour immunity in the bladder mucosa. Since it is highly selective, which targets only the cancer cells and leaves all normal cells unharmed, it could be a promising treatment option in the treatment of bladder cancer in combination with chemotherapeutic agents in the future.

Keywords: Coxsackievirus, CVA21, Tumour, Bladder cancer, Non-muscle invasive bladder cancer, BCG, Coxsackievirus A21, Oncolytic immunotherapy

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