Local cancer treatment induces systemic immune protection

A novel approach of anticancer therapy is to induce the patient’s own immune system. This approach has, however, a challenge due to local down-regulation of the immune response. Removing these brakes will enhance the activity of the patient’s own immune system, which is a promising approach in this respect.

Lytix Biopharma has developed a potential new anticancer drug, LTX-315, that kills cancer cells and induces long-term specific protective immune response.

The mode of action and promising effect of this membrane-active host defence peptide LTX-315 (Figure 1) has been demonstrated in a number of different animal models in collaboration with internationally recognized oncology research groups at Stanford, Karolinska Institute, Calgary University, the Norwegian Radium Hospital (Refs. 1-4) and Institut Gustave Roussy.

Figure 1 – LTX-315 is a membrane-active host defence peptide that induces rapid membrane destabilization and lysis of the cancer cells

LTX-315 has the potential to activate the innate immune system locally by its membrane destabilizing effect on the tumor cells followed by a release of endogenous adjuvants and natural danger signals, providing a strong rationale for using LTX-315 in combination with other types of immune-modulatory therapies. LTX-315 mounts strong and specific immune responses that are able to control disseminated tumors in animals. LTX-315 has potential as a novel treatment strategy to generate personalized tumor specific immune responses. LTX-315 is currently tested in a Phase I/IIa dose escalation clinical study.

LTX-315 clinical trials:

1. A Phase I dose-Escalation Study of LTX-315 in Patients with a Transdermally Accessible Tumour (Study C08-315-01); Completed

2. A Phase I combination, immunologic study of LTX-315 with GV1001 in patients following surgery with curative intent for malignant tumours (Study C09-315-02); Completed
Info leaf letter

3. A Phase I dose-Escalation Study of LTX-315 in Patients with Transdermally Accessible Tumours (Study C12-315-03); Recruiting

Technology Background

The intratumoral administration of LTX-315 in solid murine lymphomas, colon carcinomas, hepatocellular carcinomas, melanomas (B16) and solid tumors with stem cell-like characteristics (Figure 2) conferred complete and permanent tumor regression in between 50 to 100% of the treated animals. Local necrosis, inflammation and tumor regression is evident in treated animals. Moreover, protection or growth inhibition has been obtained against rechallenge in the cured mice. Tumour resistance could be adoptively transferred by spleen cells from LTX-315 treated animals. The resistance is abrogated by depletion of T-lymphocytes. Further MoA-studies are ongoing in collaboration with Professor Laurence Zitvogel at Institut Gustave Roussy and Dr. Joost Oppenheim at National Cancer Institute (NCI) in US.

Figure 2. – Intratumoral injection of LTX-315 in a rat stem-cell like tumor causes necrotic tumor killing and long-term survival

References: