AB091. P063. Case report: stage 4 pancreatic cancer to remission using paricalcitol and hydroxychloroquine in addition to traditional chemotherapy

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Abstract: I am a physician specializing in Allergy and Asthma, who in July 2016, had tumors in the head and the tail of the pancreas with scattered peritoneal metastases and a CA19-9 of 11,575 U/mL. Working with physicians from Weill-Cornell and Johns Hopkins, I began treatment with gemcitabine and capecitabine, plus IV Paricalcitol (25 mcg 3x's/week) and hydroxychloroquine (600 mg BID). These are both safe and inexpensive treatment options that have shown success in pre-clinical models, phase 2 human trials, and are readily available. I have now enjoyed a complete response with my latest CA19-9 of just 15 U/mL and no evidence of active disease on my most recent CT scan. Paricalcitol is Vitamin D receptor agonist without the systemic toxicity of Vitamin D such as hypercalcemia. Evidence suggests that paricalcitol helps break though the pancreatic tumor's protective stroma produced by pancreatic satellite cells that are particularly activated in pancreatic cancer. These satellite cells have high levels of Vitamin D receptors and the blocking of these receptors by paricalcitol inactivates the stromal production. These satellite cells also produce cytokines and growth factors that enhance local tumor growth, contribute to angiogenesis, and enable metastasis. Vitamin D has also been shown to exert anti-proliferative effects secondary to the upregulation of the cell cycle inhibitors which control cell proliferation, differentiation, and division. Studies have shown a reduction of several pancreatic tumor lines in mice treated with paricalcitol correlating with the degree of cell cycle kinase inhibition. Hydroxychloroquine is a relatively inexpensive drug currently available for the treatment of malaria and autoimmune diseases. Hydroxychloroquine has been shown to inhibit autophagy. Autophagy is a process of self-cannibalization in which injured cancer cells ingest pieces of themselves, such as organelles and macromolecules, to conserve energy, and, therefore, thrive. Additionally, autophagy helps rid the cancer cells of toxic substances and free radicals, such as hydrogen peroxide and superoxide. The k-Ras genetic mutation, found in over 90% of pancreatic tumors, appears to upregulate the process of autophagy which and may be responsible for the extreme resilience of pancreatic cancer cells. When combining chemotherapy with autophagy inhibition, damaged cancer cells are unable to conserve the needed energy to survive.

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