



AA-054

mTOR inhibitors in Gynecologic Oncology: Assessment of oncologic results following mTOR inhibition, in the treatment of endometrial, cervical and ovarian cancers

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Introduction/Aim: In recent years research focuses the therapeutic potential of mTOR inhibitors in the treatment of various types of cancer. Published evidence suggests that mTOR inhibitors have position in the therapeutic regimen of liver carcinomas, breast cancer and others. The role of mTOR inhibitors in gynecologic oncology is not clearly defined. This review seeks to assess whether mTOR inhibitors may have a pivotal role - alone or combined with other agents, in the treatment of gynecologic cancers.

Material and Methods: Literature search was conducted using the PubMed search engine. A critical research of published literature in regards to «mTOR inhibitors» and «human cancer» was conducted. All relevant studies were critically looked into. Those related to gynecologic cancer were selected and carefully reviewed.

Results: Published literature sustains that mTOR inhibitors have cytostatic activity against a large spectrum of human cancers, including gynecologic cancers. Combinations of mTOR inhibitors with other therapies and targeted molecular agents, have shown encouraging results particularly in ovarian and endometrial cancer.

Conclusions: New treatments seem crucial for patients with advanced gynecologic cancers or cases with recurrence, who have failed initial treatment. Published evidence highlights that mTOR inhibitors limit not only tumor expansion but also progression. The PI3k/AKT/mTOR pathway is often deregulated in endometrial, cervical and ovarian cancers. Patients carriers of PIK3CA mutations respond better in treatments with PI3K/AKT/mTOR inhibitors than patients without these mutations. Routine screening for PIK3CA mutations needs further investigation for patients with gynecologic cancer.

Acknowledgements: Scholarships from: Medical School, Empeirikeion Foundation, Research Center and Experimental Center of ELPEN. Prize in Robotic Surgery 2014, Prize in Laparoscopic Surgery 2014, Prize of Best Publication in the period 2013-2014, Prize of the Hellenic Surgical Society 2011.