PhD Proposal Presentation

Interplay between Mitochondrial Dynamics and Oxidative Phosphorylation in Endometriosis and with/without uterine pathologies

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Abstract

Endometriosis is a complex gynaecological disorder in which there is a presence of endometrial glands or stroma outside the uterine cavity (ectopic endometrium). It globally affects 247 million women and 42 million women in India. Women with endometriosis often show clinical symptoms like dysmenorrhea, non-cyclic pelvic pain, dyspareunia, dyschezia, dysuria etc. Although endometriosis is a chronic condition leading to a disabling gynecologic condition accompanied by chronic pain, inflammation, the oxidative stress is one of the key molecular pathways involved in the progression of this disease. Recent studies have demonstrated that mitochondria play a crucial role in molecular adaptation, enabling the survival and proliferation of endometrial cells in hypoxic environments. Mitochondrial dysfunction and mitochondrial DNA alterations have been reported in cases of severe endometriosis; however, no studies have been reported regarding mitochondrial dysfunction in various stages of endometriosis. Again, therapeutic options are mainly limited to hormonal therapies, which are helpful in the management of the disease, and no effective non-hormonal therapeutics are available other than NSAIDs as anti-inflammatory. In this proposed study, a cohort of women with endometriosis will be recruited, their endometrial tissue will be collected and further subjected to identify mitochondrial OXPHOS dysfunction, mitochondrial genetics and dynamic studies in various stages of endometriosis. Further, efforts will be made to evaluate the effects of phytochemicals on endometriotic cells as a step toward non-hormonal medical management of the condition.