Title: Immunohistochemical evaluation of Estrogen receptor (ER) and Progesterone Receptor (PR) in Endometrial carcinomas and its precursors

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Introduction: Endometrial carcinoma is the fourth most common malignancy among women and most common gynaecologic malignancy in the developed countries. Its incidence in the developing countries is also increasing. The clinical management of patients with endometrial cancer depends on various pathological parameters like stage of the tumour, grade of the tumour, presence of lymphovascular invasion, lymph node status and histological subtype of endometrial carcinomas. Therefore, in addition to the morphology of endometrial carcinoma, there is a need for accurate immunohistochemical markers to predict the outcome of the disease. But many of these immunohistochemical markers are not feasible to use in routine clinical practice due to various reasons. Among the proposed markers for endometrial carcinoma, Estrogen Receptor (ER) and Progesterone Receptor (PR) are widely accepted in clinical practice. With this background, the present study is performed to assess the immunohistochemical expression of ER and PR in endometrial cancers and its precursors.

Aim: To assess the expression of ER and PR in endometrial carcinomas and its precursors by immunohistochemistry.

Materials and Methods: A total of 113 cases(21 cases of disordered proliferation, 29 cases of typical hyperplasia, 25 cases of atypical hyperplasia, 20 cases of endometrioid carcinoma, 4 cases of serous carcinoma and 14 cases of carcinosarcoma, diagnosed from January 2014-December 2016 were analysed. Immunostaining for ER and PR was performed on these cases and was graded for intensity and percentage of positive tumour cells. The ER and PR expression was then correlated with the clinical and pathological features of endometrial precursors and carcinoma.

Results: The mean age of preneoplastic lesions of endometrium and carcinoma were 50 and 58 years respectively. Nulliparity was associated with relatively increased risk of carcinoma. Carcinomas were associated with mean endometrial thickness of >5mm. ER and PR expression decreased as the grade of the tumour increases. PR expression decreased as the stage of the tumour increases. There was no significant difference in ER expression with increasing stage of tumour.

Conclusion: There was no significant difference in the expression of ER and PR in the preneoplastic lesions. Strong expression of ER and PR was seen in well and moderately differentiated endometrioid carcinoma compared to poorly differentiated endometrioid carcinomas, which were mostly negative. The difference in the immunohistochemical expression of ER and PR in endometrioid and serous carcinoma support the different pathogenesis of their development.

Key words: Estrogen Receptor, Progesterone receptor, ER, PR, endometrial carcinoma, preneoplastic lesions.