Gynecol Obstet 2018, Volume: 08
10.4172/2161-0932-C6-040

HPV infection and p16INK4A and TP53 expression in rare cancers of the uterine cervix

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Cervix cancer remains among most commonly diagnosed cancer in developing countries. Except squamous cell carcinoma and adenocarcinoma, the etiopathology and oncogenic mechanisms of rare cancers remain largely unknown. The study was performed to investigate the value of HPV infection and the expression of $p16^{INK4A}$ and TP53 in rare primitive cancers of the cervix. We conducted a retrospective study of rare primitive cancers of the cervix. Main clinicopathological features were reported. HPV infection was detected by in situ hybridization. Expression of $p16^{INK4A}$ and TP53 was analyzed by immunohistochemistry. Overall, seven cases were identified, including basaloid squamous cell carcinoma (BSCC, n = 2), small cell neuroendocrine carcinoma (SCNEC), granulocytic sarcoma without acute myeloid leukemia, leiomyosarcoma, primitive neuroectodermal tumor and botryoid-type embryonic rhabdomyosarcoma. The mean age of patients was 53.7 years. Four cancers were diagnosed at advanced stages. The prognosis was unfavorable and associated with patient death in five cases. HPV types 16/18 were detected in BSCCs and SCNEC. Strong and diffuse p16INK4A overexpression was described in the nucleus and the cytoplasm of all tumor cells of BSCCs and SCNEC. The remaining cancers exhibited only scattered and focal $p16^{INK4A}$ staining. Mutated TP53 protein was detected in BSCC (case 1) and GS. Rare cancers of the cervix are aggressive and associated with poor prognosis. In contrast to mesenchymal tumors, BSCCs and SCNEC are etiologically related to high-risk HPV infection and could be identified by block positive $p16^{INK4A}$ overexpression as common cancers of the cervix. TP53 mutations are not a negligible genetic event in rare cervical cancers.

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