PhD report

Al collegio docenti del Dottorato in Medicina Molecolare

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Ciclo XXXV° Tutor Prof.ssa Paola Piomboni

Scientific activity carried out in the 2nd year of the PhD, Academic Year 2020/2021

During this year I have dealt with the data collection and writing of the following scientific works:

- Mancari R, Cutillo C, Bruni S, Vizza E et al. Development of new medical treatment for epithelial ovarian cancer recurrence. 2020; Gland Surgery

- Peiretti M, Bruni S, Colombo N, Maggioni A et al. Corrigendum to "Comparison between laparoscopy and laparotomy in the surgical re-staging of granulosa cell tumors of the ovary". Gynecol Oncol. 2020;157(1):85-88.

- Bruni S, Chiofalo B, Vizza E. Role of oncological therapies on female fertility and ferto-protective adjuvant treatments. 2020. Chapter. Nova Science Publishers.

- Chiofalo B, Baiocco E, Mancini E, Vocaturo G, Cutillo G, Vincenzoni C, Bruni S, Bruno V, Mancari R, Vizza E. Practical recommendations for gynecologic surgery during the COVID-19 pandemic. Int J Gynaecol Obstet. 2020;150(2):146-150.

During the course of this year I focused in particular on oncological pathologies of the uterine cervix:

- I have conducted a multicentric retrospective observational study with Agostino Gemelli University Hospital and National Cancer Institute Regina Elena-IFO enrolling 428 patients with definitive histological diagnosis of stage IB1 cervical cancer (according to the 2009 FIGO classification) who underwent surgery from 2001 to 2018. Since some authors suggest that some features of minimally invasive surgical approach and particular histological and molecular characteristics of cancer may contribute to the dissemination of tumor cells, the primary endpoint of this study was the analysis of relapse localizations in a homogeneous group of patients in terms of FIGO stage and individual characteristics, to evaluate whether the different laparotomic or minimally invasive (laparoscopic and robotic) approaches, present different recurrence patterns of the disease. The secondary endpoint of

the study was the evaluation of the patients variables and the molecular characteristics most involved with the risk of relapse and therefore lower DFS and OS.

- I am working on the regional screening of preneoplastic lesions of the uterine cervix and treatment of high grade and invasive lesions in second level clinics.
During my clinical activity I am studying which molecules may be involved in the tendency to relapse and worsen of neoplastic lesions.
Some study showed that exosomal levels of miRNA-21 and miRNA-146a were higher in biological specimens from cervical cancer patients than their normal HPV-positive and HPV-negative counterparts. A recent review also showed that miRNA7, miRNA-99, miRNA-378 and miRNA 17-92, are the primarily altered exosomal miRNAs in HPV-associated cancers, particularly cervical cancer. I am therefore studying other molecules that can be searched in cervico-vaginal lavage samples to identify a pattern of exosomal miRNA expression. These liquid biopsies could help us to identify in a minimally invasive way, which lesions should be treated earlier and in a more radical way.

I made lesson for the Master in Medical Biotechnology and Biology of Human reproduction in June 2021. The lesson dealt with the role of surgery in the main gynecological pathologies related to infertility, in particular endometriosis and uterine fibromatosis. Then I discussed the role of medical (chemo and radiotherapy) and surgical treatments on the main female oncological pathologies. Finally, I dedicated to fertility sparing treatments and to the study of the molecules that may have a role in preserving cancer patients fertility.

I attended the laboratories of the ovarian tissue bank in Rome, at the Regina Elena National Cancer Institute, IFO, for the study of fertility preservation techniques in women affected by gynecological cancer. In particular, I actively participated to minimally invasive surgical interventions of women suffering from ovarian, endometrial, cervical and breast cancers. I dealt with the collection of ovarian tissue and I studied the techniques for cryopreservation of the tissues in order to subsequently be able to perform an orthotopic or heterotopic reimplantation after the radiotherapy and chemotherapy oncological treatments.