This presentation will review the scope of long-term health effects after pediatric cancer, the challenges in coordinating long-term survivor care, health screening guideline resources available to facilitate survivor care, and the impact of late health outcomes research among adults treated for childhood cancer.

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Sp05

UPDATE ON FERTILITY PRESERVATION

Murat Sönmezer

Over the past 50 years, there has been a remarkable improvement in the cancer survival rates due to significant progress in the diagnosis and treatment. However, multi–agent chemotherapy regimens and/or radiotherapy, and hematopoietic stem cell treatments are associated with significant long–term sequels such as growth disorders, cardiovascular problems, neurocognitive abnormalities, secondary malignant tumors, and reproductive failure. Cytotoxic therapy has also been used in some non-malignant hematologic, immunologic, and genetic diseases, which are resistant to standard treatment modalities. Moreover, gonadal surgery for benign gynecological lesions including endometriomas may be associated with decreased ovarian reserve, even can result in a permanent ovarian failure especially if the disease is bilateral. It was projected that in 2020, there would be approximately 90.000 new cancer cases in adolescents and young adults, on the other hand overall cancer mortality declined by 1% annually, from 2008 to 2017 among all age and sex groups [1]. As a result of the increasing number of cancer survivors, a strong focus has been placed on the delayed effects of cancer treatments which can all affect future quality of life of the patients.

When selecting the most optimal option to preserve fertility one should analyze all possible confounding factors such as age of the patient, available time before cancer treatment, ovarian reserve, the type and duration of chemotherapy and/or radiotherapy, and couple status. There are currently various established and non-established techniques for fertility preservation performed worldwide. Embryo cryopreservation has long been practiced with high success rates which is quite similar to outcomes using fresh embryo transfer. Likewise, with the advent of modern freezing technologies including vitrification, the success rates with oocyte freezing have also remarkably increased. Before oocyte or embryo cryopreservation at least 2 weeks is required for ovarian stimulation before oocyte retrieval. For estrogen sensitive tumors including breast and endometrial cancers, safer ovarian stimulation protocols incorporating letrozole were defined with high success rates. Patients undergoing pelvic radiotherapy laparoscopic ovarian transposition can be performed, however the success rates vary between 16-90%. Ovarian tissue cryopreservation and transplantation is among one of the key components of available fertility preservation techniques with more than 200 reported livebirths worldwide. Transplantation of frozen thawed ovarian tissue is not only a viable option to achieve pregnancy, but it also enables resumption of reproductive functions by producing hormones that has a substantial impact on the quality of life of the patients suffering premature ovarian failure. One of the most important advantages of ovarian tissue freezing is that there is no need to delay cancer treatment since ovarian stimulation is not required. Although various methodologies have been tested in many animal and human studies for ovarian tissue freezing, until recently, this procedure has been classified as “experimental” as the precise methodology has not yet been established. However, with increased clinical success together with increasing number of healthy live births in recent years, ovarian tissue freezing is now considered as an "acceptable" method for fertility preservation. The feasibility of autologous hematopoietic stem cell transplantation to improve pregnancy rates in patients with poor ovarian reserve has also been investigated with reported success rates in limited number of recent studies.

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Sp06

PRINCIPLES OF TRANSFUSION IN CHILDREN WITH CANCER

Dilek Gürlek Gökçebay

Transfusion therapy has an important role for pediatric cancer patients. A multicenter retrospective study of 4766 children with cancer demonstrated that 39.3% of the patients were given a transfusion. Red blood cells (RBCs) and platelets were the most commonly transfused components. Patients between 1 to <6 years of age were most likely to be transfused and HSCT, acute myeloid leukemia, and aplastic anemia were most often associated with transfusion.

Anemia occurs due to the suppression or dysfunction of erythropoiesis secondary to the underlying disease, as well as a consequence of bleeding in children with cancer. National audits of pediatric RBC transfusions in the United Kingdom have reported that more than half of pediatric transfusions were given to hematology/oncology patients. The balance between the tolerance to anemia and the need for transfusion may be different from other patients, because of underlying disease, the presence of comorbidities that influence the tolerance to anemia, and complications of multiple previous transfusions. In children with cancer undergoing hematopoietic stem cell transplantation (HSCT) who are at risk for critical illness and hemodynamically stable, suggested Hb value is 7 to 8 g/dL for the threshold of RBC transfusion. RBC transfusions are usually dosed as 10 to 15 mL/kg. However,the decision to transfuse should not be driven by the hemoglobin concentration, the patient’s clinical status should also be taken into consideration. Leukoreduction is one of the most common modifications to cellular blood components with universal leukoreduction being accepted increasingly as a standard. Cellular blood components including viable lymphocytes should also need to be irradiated in children with cancer. The gamma irradiation prevents T-lymphocytes from proliferating and reduces the risk of transfusion-associated

graft-versus-host disease (TA-GVHD), in patients with significant immunosuppression due to chemotherapy (eg. purine analogs), immunomodulators, radiation, or HSCT patients.

Thrombocytopenia can occur in nearly all children with cancer during their disease course as a result of bone marrow infiltration, chemotherapy, or associated illness, such as sepsis or disseminated intravascular coagulopathy. Platelet transfusions are prescribed to prevent or treat bleeding (referred to as prophylactic or therapeutic transfusions, respectively). In critically ill children with an underlying oncologic diagnosis, 71% of the platelet transfusions were given prophylactically. American Society of Clinical Oncology recommmends for a prophylactic platelet transfusion threshold of 10×10^9/L. However, a scarce data exists to platelet transfusion therapy in pediatric cancer patients with clinically relevant bleeding, fever, hyperleukocytosis, infection, or receiving anticoagulation. Dosing recommendation is 10 to 15 mL/kg of ideal body weight. Leucoreduction and irradiation are also recommended for platelet transfusions in pediatric cancer patients.

Fresh Frozen Plasma (FFP) is transfused to correct multiple coagulation factor deficiencies in patients with active bleeding (therapeutic transfusions) or to prevent bleeding before invasive procedures (prophylactic transfusions). Dosing recommendation is 10 to 20 mL/kg. Patients with cancer may be at risk for abnormalities of hemostasis due to tumor pathology (eg. AML M3) and evolution of the disease as well as treatment effect. Besides, FFP transfusion has significant risk that should be weighed against its perceived benefit.

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Sp07

AN APPROACH TO PAIN IN CHILDREN WITH CANCER

Yavuz Akçaboy

The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with, or relating that associated with, actual or potential tissue damage." although this definition is made for adults, it also applies to children. pain is a very complex phenomenon and is modulated by many factors. It usually begins with a tissue injury, followed immediately by the activation of the neural pathway. but this physiological state cannot explain the experience of pain. the experience of pain depends on the person's interpretation.

About 15,000 children and adolescents are diagnosed with cancer in the United States every year, and 80% of them survive for a long time with their diseases. Almost all these children experience pain somewhere during their own cancer experience. This condition occurs either as a result of the disease itself, or as a side effect of treatment, or as a result of procedures related to their care. In the whole process of cancer, pain is the most common, severe and stressful symptom.

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Sp08

MEDICAL TREATMENT IN EWING SARCOMA

Roberto Luksch

Multidisciplinary treatment has improved the prognosis of Ewing sarcoma (ES) over the last decades, with the introduction of multi-agent chemotherapy and multidisciplinary patient management. This improvement was due from both the use of intensified systemic treatments and optimization of local treatments, using surgery and radiotherapy in different combinations and sequences.

Nowadays the treatment generally consists of induction chemotherapy, followed by surgery and/or local radiotherapy, and then maintenance chemotherapy.

Extended international collaboration has enabled prognostic groups to be better defined and risk-adapted treatment strategies to be tailored to patients.

The most remarkable steps along the way in which chemotherapy has improved the prognosis for ES are different: 1-The benefit of adding ifosfamide and etoposide (IE) to the vincristine, doxorubicin, and cyclophosphamide (VDC) combination for localized ES was demonstrated; this benefit was not demonstrated in patients with metastatic disease (Grier 2003). 2-The randomized EuroEwing99 R1 trial addressed the equivalence of ifosfamide and cyclophosphamide in localized disease: the conclusion was that cyclophosphamide might be able to replace ifosfamide in consolidation treatment of standard-risk ES (Le Deley 2016) 3-A randomized Childrens Oncology Group trial demonstrated that dose-intensifying chemotherapy by shortening the interval between treatments with the regimen VDC/IE (Vincristine+Doxorubicin+Cyclophosphamide, and Ifosfamide+Etoposide) led to a longer 5-year event-free survival in cases of localized disease. Compared with those assigned to the 3-week standard treatment interval, patients assigned to the 2-week treatment interval had a longer 5-year event-free survival (Womer 2012) . This result was corroborated by the EuroEWING Consortium Study 2012, where the compressed VDC/IE regimen was randomly compared with VIDE (vincristine, ifosfamide, doxorubicin, and etoposide), which was the backbone induction regimen of the EEC-99 trial (Brennan 2020). 4-The efficacy of a consolidation treatment with high-dose melphalan/busulfan (BuMel) + stem cell rescue was examined in prospective phase II non-randomized studies (Ferrari 2011), and in a large randomized study by the EuroEWING Consortium. For localized ES with a poor histological response to induction chemotherapy, there were signs of BuMel proving more effective than standard maintenance chemotherapy (Whelan 2018). Evidence of efficacy of BuMel in metastatic disease is limited to patients with pulmonary metastases, in which case its value is debatable, and has to be set against a significantly higher risk of severe acute and late side effects when compared with standard maintenance chemotherapy (Dirksen 2019).

There is an unmet medical need to improve prognosis of patients with synchronous metastatic disease or relapse. In the last decades, efficacy of new drugs was disappointing and no new drugs have been successfully introduced up to now in front