

Comment

This issue of "Progress in Medicine" is devoted to paediatric oncology and haematology, and it includes a selection of papers from Polish centres, which were presented during the 8th Congress of Polish Society of Paediatric Oncology and Haematology held in June 4, 2016 in Katowice.

The development of diagnostic and therapeutic standards for invasive fungal disease in children is a very important achievement. Invasive fungal disease is currently one of the most important and dangerous complications of immunosuppressive therapy affecting patients treated for cancer, immune disorders or those undergoing stem cell transplantation. Invasive fungal disease can eliminate the effect of previous therapy and contribute to a failure in the treatment of the underlying disease. Therefore, the guidelines for the diagnostic and therapeutic management in paediatric patients developed by experts are of great practical importance.

The article entitled "The role of endothelin as an early marker of acute left ventricular dysfunction in children undergoing haematopoietic stem cell transplantation" addresses a very important issue of identifying children at risk of heart failure after stem cell transplantation. The authors have shown that the symptoms of transient cardiotoxicity were observed only in children with increased ET-1 serum levels. Therefore, children with increased ET-1 serum levels should be included in the group of high risk of post-transplantation heart failure.

Asymptomatic Epstein-Barr Virus (EBV) carriers are relatively common in Polish population. However, HSCT patients infected with the virus can develop a life-threatening complication, i.e. post-transplant lymphoproliferative disorder (PTLD). Therefore, the importance of an effective diagnostic and therapeutic strategy for EBV infections is emphasised. Professor Styczyński et al. attempted an analysis of this diagnostic and therapeutic strategy in Polish paediatric centres for haematopoietic cell transplantation between 2012 and 2015. A total of 650 HSCT procedures, including 499 allogeneic transplantations, were included in the analysis, which demonstrated that EBV reactivation occurred only in post-allo-HSCT patients. The incidence of EBV reactivations was 24.3% (65/267) between 2014 and 2015, and was significantly higher compared to the period 2012-2013, i.e. 15.5% (36/232) ($p = 0.014$; OR = 1.8; 95%CI = 1.1-2.8). PTLD-related death occurred in 4/36 (11.1%) patients with EBV reactivation between 2012 and 2013. No fatal cases (0/65) due to EBV-related PTLD were reported between 2014 and 2015 ($p = 0.006$; OR = 3.0; 95%CI = 2.3-4.0). The results of this study lead to the conclusion that the diagnostic and therapeutic strategy for EBV infections based on ECIL guidelines, which was used in Polish paediatric centres for haematopoietic cell transplantation between 2012 and 2015, shows high therapeutic efficacy and can be recommended for further clinical practice.

The paper "Posaconazole in prophylaxis of invasive fungal disease in children and adolescents: one-year follow-up of refund program" aims to assess the outcomes of antifungal prevention using posaconazole in 3 paediatric haemato-oncologic centres and 2 paediatric centres for haematopoietic cell transplantation in the first year of the availability of posaconazole refunded by the National Health Fund. The authors presented a thorough statistical analysis and concluded that Posaconazole used for prophylaxis in post-HSCT patients reduced the incidence of invasive fungal disease compared to historical group from 15.5 to 9.5% (OR = 0.6; $p = 0.2$). The data collected in the first year of treatment with the refunded posaconazole available in pharmacies (post-HSCT patients) is encouraging due to the high safety profile of the drug, including patients aged < 12 years. Only 2 patients receiving prophylactic posaconazole died due to invasive fungal disease.

The article entitled "Epidemiological analysis of staphylococci infections in patients treated for malignancy or undergoing stem cell transplant – update report 2016" was based on nationwide data obtained from paediatric haemato-oncologic centres. The aim of the study was to assess the epidemiology and treatment outcomes for staphylococcal infections in children with cancer and/or after haematopoietic cell transplantation in Polish paediatric centres between 2014 and 2015 compared to the period 2012-2013. A two-fold increase in the incidence of staphylococcal infections in children treated in haemato-oncologic departments was reported between 2012 and 2013. The treatment efficacy for staphylococcal infections was more than 98%, and the treatment failures in staphylococcal infections were related to the progress of the underlying disease in patients from haemato-oncologic centres or with severe post-transplantation complications.

Infectious complications in paediatric patients receiving anticancer therapy have significant effects on prognosis and the course of therapy. The article entitled "Infectious complications in children with bone tumours" assessed bacterial, fungal and viral infections in 52 children, including 25 children with Ewing's sarcoma (ES) and 27 children with osteosarcoma, treated between 2014 and 2015 in 9 cancer centres in Poland. The type and onset of infection as well as treatment duration and fatal outcomes were analysed. An interesting conclusion is that a relatively high incidence of bacterial complications is observed in children with bone tumours, particularly those with Ewing's sarcoma, whereas fungal and viral infections occur sporadically.

Invasive fungal infections are one of the most serious infectious complications in patients receiving chemotherapy or undergoing hematopoietic cell transplantation and, in addition to cancer recurrence, are one of the main causes contributing to mortality in these patients, particularly during prolonged periods of neutropenia. Despite a major improvement in anticancer treatment outcomes in recent years, cancer is the second leading cause of death in paediatric patients. Therefore, it appears obvious that further treatment intensification will increase the incidence of complications. Infections are one of the main complications in these patients. Therefore, in 2012 the Polish Paediatric Group for Infections, working under the initiative of the Polish Society of Paediatric Oncology and Haematology, implemented a monitoring programme for infections in children receiving anticancer therapy in cancer and haematology centres as well as in patients undergoing haematopoietic cell transplantation in paediatric transplantation centres. A paper entitled "Profile of infections in Polish pediatric haematology, oncology and stem cell transplantation centers in 2014-2015" aimed to analyse the profile of bacterial, viral and fungal infections in paediatric oncology, haemato-oncology and haematopoietic cell transplantation centres during the subsequent 24 months (2014-2015) (the iPhot-15 Programme) compared to historical data from the period between 2012 and 2013 (the iPhot-13 Programme). Based on the analysis, the authors found an increase in the incidence of bacterial infections, influenza virus infections as well as EBV reactivation in the last two years. Although the incidence of invasive fungal infections has decreased, it is still higher compared to international data. An improved cure rate for invasive fungal disease and viral infections is another important conclusion.

The authors of the article entitled "The evaluation of changes in body mass index (BMI) of children diagnosed with leukemia or lymphoma before and after treatment in consideration of age at diagnosis and patient's lifestyle" attempted to analyse the BMI in children treated for lymphoproliferative disorders. The topic is very current and a number of publications point to the risk of obesity, and thus cardiovascular diseases, in patients cured of cancer.

Another interesting original paper evaluates the effects of anticancer therapy on the immune system's constitution, with a main focus on the population of B cells. The paper provides new data on the potential late side effects of anticancer therapy in children.

In this issue of "Progress in Medicine", it is worth paying attention to 5 case studies.

The first article describing a case of severe acquired neutropenia in a child provides an important clinical input as it relates to the issue often associated with a number of diagnostic difficulties. It is also the cause of anxiety in patient's parents/guardians and thus a number of medical consultations.

The paper entitled "Pure erythroid leukemia in four month old infant – case report" presents a case of a four-month infant diagnosed with a very rare myeloid leukaemia – erythroleukemia. Due to the lack of satisfactory effects after 3 chemotherapy cycles, the child was qualified for haematopoietic cell transplantation from a compatible family donor.

Another report describes a child with aplastic anaemia secondary to parvovirus B19 infection. On this occasion, the paper discusses the latest views on the pathophysiology of secondary aplastic anaemia associated with this virus.

A team of authors from Warsaw presented an interesting case of a child with a congenital asymptomatic mediastinal cyst diagnosed during treatment for acute lymphoblastic leukaemia. The cyst was detected accidentally following CT due to prolonged febrile neutropenia.

The paper entitled "Intracranial haemorrhage in a boy with moderate haemophilia A – case report" refers to the important problem of management in a patient with moderate haemophilia A with intracranial bleeding due to head injury. The authors point out that even patients with moderate haemophilia A should immediately receive clotting factor concentrate in such a situation, and the decisions regarding neurosurgical interventions should be undertaken with great caution.

We also present one review article on the issues related to the incidence of factor VIII inhibitor in children.

This issue of "Progress in Medicine", presenting papers that demonstrate great progress in the diagnostics and treatment of cancer and hematopoietic diseases as well as articles suggesting practical management strategies, should raise the interest of paediatricians of various specialties.

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