# PNH in childhood

Marije Bartels, Pediatric hematologist/oncologist
Department of Pediatric hematology and stem cell transplantation, Wilhelmina Children's Hospital, University Medical Center Utrecht, The Netherlands

Paroxysmal nocturnal hemoglobinuria (PNH) is a chronic hematological disorder, based on a genetic defect in the hematopoietic stem cell compartment, and characterized by chronic hemolysis, and potential devastating consequences, most importantly thrombosis. While PNH is already very rare in adults, PNH in children has only been reported in case reports, and small case series. SInce clinical presentation, and therapeutic approach can differ from PNH in adults, it is therefor important to increase our expertise of PNH in children in order to recognize this clinical entity, and treat it adequately in this specific population.

While the incidence of classical PNH in children has been unknown so far, the international PNH registry will provide insights in this matter in the near future. The incidence of PNH (clones) in the context of a bone marrow failure disorder (aplastic anemia or MDS) varies from 20-50%. Recently it has been demonstrated that in refractory cytopenia of childhood (RCC, hypoplastic MDS), a MDS subclass specific for the pediatric population (80% of pediatric MDS), the incidence of PNH clones was 41%, compared to 13-23% in adult low-grade MDS patients, suggesting distinct pathophysiological mechanisms.

Comparable to treatment of adult patients suffering from PNH, treatment of PNH in children is challenging. PNH treatment in the context of a bone marrow failure disorder is part of the treatment for AA and MDS according to international guidelines, including immunosuppressive therapy (ATG, cyclosporine), and allogeneic stem cell transplantation (SCT). In comparison with adult patients suffering from AA/MDS, allogeneic SCT is a very succesfull treatment modality in children with AA/RCC, reflected by an overall survival of >90% in our pediatric SCT unit. Treatment results of classical PNH have been improved dramatically following the introduction of the C5 monocolonal antibody eculizumab (Soliris®). Still, since PNH, in the majority of cases is a chronic hematological disorder, and eculizumab is a symptomatic (not curative) treatment modality, this implies lifelong treatment. Therefore, for the pediatric population in particular, treatment with allogeneic stem cell transplantation, should be considered in selected cases.