Other haematological investigations were within normal limits and the impression was that of neutropenia secondary to influenza. She was started on G-CSF injections. Despite neutropenic precautions, she developed a temperature spike and was treated according to the febrile neutropenia guideline. A high CRP and procalcitonin indicated that there was likely a concomitant bacterial infection although no clear source could be found. When her white cell count started to improve, there was a decrease in haemoglobin requiring blood transfusion and she had a small decline in her platelet count which resolved on its own. She improved symptomatically and remained stable after this.

Conclusion: This case showed haematological complications of influenza B which have not been frequently reported. Influenza is associated with a number of complications and therefore one must emphasise the importance of vaccination to try and prevent them.

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Hb F Malta 1; A biomarker for the developmental control of globin gene switching

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Introduction: Commonly occurring foetal haemoglobin variants (Hb F Malta 1 and Hb F Sardinia) were used as biomarkers in order to search for quantitative trait loci which are associated with the expression of foetal haemoglobin in the perinatal period.

Methods: A total of 282 Hb F Malta 1 newborns were enrolled in the study. Reverse phase HPLC was used for globin chain quantification and several genotyping techniques were used to characterise known quantitative trait loci. Two Hb F Malta 1 homozygotes were sequenced with NGS to find regions which are coinherited with Hb F Malta 1.

Results: *BCL11A* rs4671393 polymorphism was found to be associated with increased foetal haemoglobin. XmnI polymorphism was associated with increased γ-globin expression whilst Hb F Sardinia compound heterozygotes were found to have increased Hb F Malta 1. Several upstream and downstream olfactory genes are coinherited with Hb F Malta 1. These regions are thought to contain foetal haemoglobin enhancer regions.

Conclusion: The significance of XmnI polymorphism suggests the presence of stress erythropoiesis in the newborn. A *BCL11A* variant delays the foetal to adult haemoglobin switching. Further research with NGS might reveal long range regulatory regions.

Disclosures: This study was funded by the Endeavour Scholarship Scheme

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Utility of bone marrow biopsy in positron emission tomography-staged patients with classical Hodgkin lymphoma

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Introduction: Classical Hodgkin lymphoma (cHL) is a potentially curable disease and treatment is based on accurate staging. Bone marrow infiltration (BMI) implies stage IV disease, which entails more extensive chemotherapy. BMI is traditionally detected by bone marrow biopsy (BMB). 18F-fluorodeoxyglucose positron emission tomography/computed tomography (PET/CT) has become the standard imaging investigation for cHL. Some studies have shown PET/CT to be more sensitive than BMB in detecting BMI by lymphoma. The aim of this study was to determine whether PET/CT can reliably substitute BMB in the detection of BMI by cHL.

Methods: Patients treated for cHL between January 2010 and December 2017 were retrospectively identified. All PET/CT scan reports were evaluated and scans showing skeletal uptake were reviewed by nuclear medicine physicians who categorised the uptake as diffuse or focal. Patients with focal skeletal uptake were considered to have BMI by cHL. The agreement in the classification of Ann Arbor stage between the combination of PET/CT and BMB compared to PET/CT alone was assessed.

Results: One hundred and five patients were included, with a median age of 34 years (range 16-91). Fifty-nine patients (56.2%) were male. Twenty-four patients (22.8%) had BMI on PET/CT. Six patients (5.7%) had a positive BMB. All patients with a positive BMB had a positive PET/CT. In 18 patients (17.1%) the PET/CT was positive while the BMB was negative. No patient was upstaged when considering BMB information compared to the use of PET/CT alone. Patients with BMI on PET/CT were more likely to have B symptoms (p=0.007), other extranodal sites involved (p=0.001), anaemia (p=0.006), raised C-reactive protein (p=0.003) and higher ECOG performance scores (p=0.013).

Conclusion: PET/CT is very sensitive for the detection of BMI by cHL. BMB adds very little to the staging of patients undergoing baseline PET/CT.

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Human co-culture immune system model for immunomodulatory applications

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Introduction: The immune system is one of the most complex systems in the human body and models are constantly being developed in the sets, presenting a complex network of cellular interactions, molecular affinities via differential receptor expression, and the rel