The city of Mbujimayi in the Democratic Republic of the Congo
The authors do not declare any conflict of interest

P-034 EFFECTS OF HYDROXYUREA ON SKELETAL MUSCLE MICROVASCULATURE OF MICE WITH SICKLE CELL DISEASE

RICCETTI M.[1], MICHEL C.[2], BENDAHAN D.[2], MESSONNIER L.[1]

[1]Université Savoie Mont Blanc, LIBM, Le Bourget-du-Lac, FRANCE; [2]Aix-Marseille Université, CNRS CRMBM, Marseille, FRANCE

Purpose: Hydroxyurea (HU), also known as hydroxycarbamide has been commonly used as a therapeutic strategy in Sickle Cell Disease (SCD) since 19841. HU has been recognized as efficient in SCD patients with an acceptable toxicity2. From a clinical point of view, HU has been shown to reduce painful episodes, hospitalizations, blood transfusions, acute chest syndrome and mortality3,4. These beneficial roles of HU are mediated by the increase of fetal hemoglobin (HbF) production and the decrease of abnormal hemoglobin (HbS) levelin erythrocytes. HU can then reduce the polymerization-sickling cascade thereby causing a decrease in the number of circulating sickled red blood cells5. HU also induces physiological changes such as an increase in both number and size of erythrocytes. It can also decreases hemolysis6. HU is also known as a nitric oxide (NO) donor which can directly affect the microvascular function. Although microvasculature is known to be remodeled in SCD (capillary rarefaction and enlargement8), the corresponding effects of HU have been scarcely reported. Given that HU improves hemorheologic and hemodynamic functions in SCD patients, one can hypothesize that HU may be beneficial for skeletal muscle microvasculature.
Materials and methods: Gastrocnemius muscles of 11 HbSS mice and 12 HbSS HU-treated mice (Townes model) were used to perform histochemical analyses. Morphometric analyses of microvasculature were performed by staining the endothelial cells with CD31 antibody. Microvascular network analysis included Capillary Outer Diameter (COD), Perimeter (CP), Surface Area (CSA), and Density (CD, number of capillaries per mm2) as well as the capillaries to muscle fibers ratio for a given muscle area (C/F). ANOVA and Tukeys post-hoc tests were used to compare data of HbSS and HbSS HU-treated mice. Significance was accepted when p≤ 0.05.
Results: HbSS HU-treated mice displayed significantly higher COD, CP and CSA. than control HbSS mice (p = .033, p = .013, and p = .005 respectively, Figure 1). On the other hand, CD and C/F did not differ between HbSS and HbSS HU-treated mice (Figure 2).
Conclusion: Given that HU is a NO donor on the one hand and that NO can induce hyperemia on the other hand, one can hypothesize that that the widening of capillaries might be related to hyperemia related to HU-treatment. As supporting evidences, Bosman et al 9 reported that hyperemia induced capillary distension/enlargement while Kano et al.10 observed a reduced capillary luminal diameter in response to a reduced blood flow

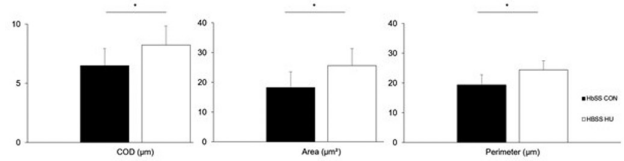

Figure 1. Capillary outer diameter (COD), area (CA) and perimeter (CP) in HbSS and HbSS HU-treated mice.

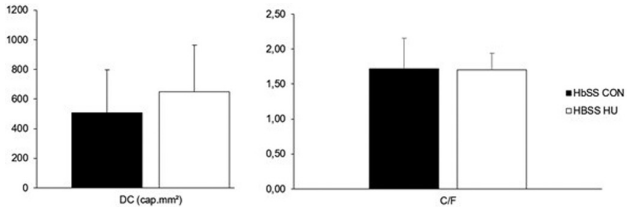

Figure 2. CD and C/F Indices of microvascular network in HbSS and HbSS HU-treated mice
The authors do not declare any conflict of interest

P-035 RED BLOOD CELL ALLOIMMUNIZATION IN SICKLE CELL DISEASE PATIENTS IN THE DEMOCRATIC REPUBLIC OF THE CONGO

KAMBALE-KOMBI P.[1], MARINI DJANG'EING'A R.[1,2], ALWORONG'A OPARA J.[1], MINON J.[4], SEPULCHRE E.[4], BOURS V.[2], FLOCH A.[3], PIRENNE F.[3], KAYEMBE TSHILUMBA C.[1], BATINA AGASA S.[1]

[1]University of Kisangani, Faculty of medicine and pharmacy, Kisangani, REPUBLIC OF THE CONGO; [2]Université de Liège, Liège, BELGIUM; [3]Univ Paris Est Creteil, Paris, FRANCE; [4]Centre Hospitalier Régional de la Citadelle, Liège, BELGIUM

Purpose: Data regarding red blood cell (RBC) alloimmunization in sickle cell disease (SCD) patients are scarce in the Democratic Republic of the Congo (DRC) which is the third most affected country in the world by sickle cell disease. We aimed to determine the prevalence of red blood cell alloimmunization and alloantibody specificity in SCD patients in Kisangani (DRC).
Materials and methods: We conducted a multi-hospital, multi-site based cross-sectional study among 125 SCD patients at Kisangani and 136 at the Centre Hospitalier Régional de la Citadelle (CHR) of Liège (Belgium). Data were collected using a survey form. Diagnostic con?r-mation of SCD was made by high-performance liquid chromatography coupled to mass spectrometry. Alloantibodies were screened using the agglutination technique on gel cards and their specificity determined using 11 and/or 16 cell panels. Statistical analyses were carried out using SPSS.
Results: The prevalence of RBC alloimmunization was 9.6% for samples collected at Kisangani versus 22.8% (including historical antibodies) at the CHR and increased to 10% at Kisangani versus 29.3% at the CHR when considering only patients transfused in the last five years prior to the study. At Kisangani as well as at CHR, the median age of alloimmunized patients was higher than that of non-alloimmunized patients, 15.5 years (IQR:4.8-19.8) vs 10 (IQR: 6.5-17) and 24 years (IQR:14-31) vs 17(IQR:12-24), respectively. The median number of blood units was higher in both Kisangani and CHR immunized patients compared to non-immunized patients, 8(IQR:5-11) vs 5(IQR:3-13) and 41(IQR:6-93) vs 6.5(3-37) respectively. At Kisangani(N=14), the most frequent antibodies were anti-D (28.6%), anti-C (21.4%), anti-M (14.3%,) and anti-N (14.3%) versus anti-E (13.6%), anti-S (13.6%), and anti-Lea (11.4%) at the CHR(N=44).
Conclusion: Red blood cell alloimmunization is a common complication of transfusion therapy in SCD patients in the DRC and is mostly directed against the RH system. In a low income context in the DRC, blood transfusion with a minimum ABO, D, C, E antigen matching could significantly reduce the incidence of this complication.
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