Haemolytic Disease of Foetus and Newborn and Haemolytic Transfusion Reaction Due to Kidd Antibody in Hospital Umum Sarawak, Malaysia

Irni Mohd Yasin[1], Narazah Mohd Yusoff[1], Afifah Hassan[2], Muhammad Masrin Md. Zahrin[3]

[1]Regenerative Medicine Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia
[2]National Blood Center, Kuala Lumpur, Malaysia
[3]Hospital Umum Sarawak, Sarawak, Malaysia

Haemolytic Disease of Foetus and Newborn (HDFN) and Haemolytic Transfusion Reaction (HTR) may occur due to antibodies against Kidd antigen. In Malaysia, the prevalence of RBC alloimmunization due to Kidd antibody for cases of HDFN and HTR have been reported [1-2] however there is insufficient data in Hospital Umum Sarawak (HUS).

The aim of this study is to determine whether Kidd alloimmunization causes HDFN and HTR. Indirectly categorize Kidd phenotype blood in regular blood donors.

Records of alloimmunisation cases from 2011 to 2014 were retrieved and traced to the patients' medical records to determine whether Kidd antibodies is the underlying cause of HDFN and HTR in HUS. Two hundred and fifty (250) regular blood donors in HUS from 1st to 10th September 2015 were recruited. Blood samples were phenotyped for Kidd blood group using Diamed-ID gel card system and anti-Jka anti Jkb seraclone Biorad.

The results showed there were 1109 cases of alloimmunisation recorded. Out of this 44 (4.0%) cases of alloimmunisation were due to Kidd antibody and 1065 (96.0%) cases were due to other antibodies. Ten (10) out of 44 (22.7%) cases of alloimmunisation were due to Kidd antibody resulting in HDFN whilst 4 out of 44 cases (9.1%) resulting in HTR. These results were not statistically significant ($p > 0.05$).

Meanwhile, the results of Kidd phenotype showed the presence of Jk(a+b+) phenotype in 110 out of 250 (44.0%) and Jk(a-b-) phenotype in 7 out of 250 (2.8%) blood donors. The other Kidd phenotypes detected were Jk(a+b) in 60 out of 250 (24.0%) and Jk(a-b+) in 73 out of 250 (29.2%) blood donors. Kidd phenotype was detected in four (4) ethnic groups; Chinese,

127 out of 250 (50.8%), Malays, 96 out of 250 (38.4%), Bidayuh, 25 out of 250 (10.0%) and Iban, 2 out of 250 (0.8%). The results also showed that Jk(a-b-) phenotype is present only in the Malays 7 out of 250 (2.8%) but not found in the other ethnic groups, and this is statistically significant ($p<0.05$).

This study shows that alloimmunisation by Kidd blood group system is uncommon for the underlying HDFN and HTR in HUS. The most common Kidd phenotype among regular blood donors is Jk(a+b+). The prevalence of Jk(a-b-) phenotype in Malays in Sarawak is highest compared to earlier studies in Malaysia and Asia.

In conclusion, there is low prevalence of Kidd antibody causing HDFN and HTR and Kidd blood group system was successfully characterised in regular blood donors in HUS.

Keywords: Haemolytic Disease of Foetus and Newborn (HDFN), Haemolytic Transfusion Reaction (HTR), Kidd blood group system, ethnicity

* **Correspondence:** narazah@usm.my

Acknowledgements

Advanced Medical and Dental Institute (AMDI) Universiti Sains Malaysia (USM) Fellowship.

References:

1. Al-Joudi, F., et. al., *Prevalence and specificities of red cell alloantibodies among blood recipients in the Malaysian state of Kelantan*. Asian J Transfus Sci, 2011. **5**(1): p. 42-45.
2. Yousuf, R., et. al., *Incidence of Red Cell Alloantibody among the Transfusion Recipients of Universiti Kebangsaan Malaysia Medical Centre.* Indian J Hematol Blood Transfus, 2013. **29**(2): p. 65-70.