JOURNAL-BASED LEARNING EXERCISES

Each article's contents should be read, researched and understood, and you should then come to a decision on each question. The pass mark is 17 out of 20 questions answered correctly. JBL exercises may be completed at any time until the published deadline date. Please select your choice of correct answers and complete the exercises online at: **www.ibms.org/cpd/jbl**

DEADLINE WEDNESDAY 2 MAY 2018

A descriptive single-centre experience of the management and outcome of maternal alloantibodies in pregnancy. Chatziantoniou V, Heeney N, Maggs T *et al. Transfus Med* 2017; **27** (4): 275-85. Assessment No 020218

01	Routine antenatal anti-D prophylaxis (RAADP), in addition to post-natal prophylaxis, was introduced in the UK in 2002 and reduced related mortality from one death in 2200 births prior to prophylaxis to one death in 21,000 births.
02	The outcomes for fetuses antigen-positive for the maternal alloantibody depend on a number of factors, but more recently described is the importance of glycosylation patterns.
03	The strength of umbilical cord blood DAT positivity was predictive of disease severity.
04	No correlation was found between severely affected neonates and five-minute APGAR scores.
05	Haemolytic disease of the fetus (HDF) can result in mild to severe anaemia, with intrauterine death (IUD) or stillbirth occurring due to hydrops fetalis.
06	The degree of haemolysis appears to depend on the strength of interaction between the IgG and the phagocytic-IgG Fc receptors (FcγR).
07	Seven multiparous women without a history of transfusion developed clinically significant antibodies. Four of the neonates born by these pregnancies were DAT-positive, and one required treatment.
08	There was a significant correlation between antibody concentration and disease severity for anti-D, as all cases with anti-D concentrations above 20 IU/mL suffered from severe disease.
09	The single case of anti-U in the study resulted in a DAT-positive neonate that required an exchange transfusion.
10	There is a false-negative rate of >1.0% for RhD genotyping when testing after 11 weeks' gestation.
11	Anti-c and anti-K also cause HDFN and are associated with significant fetal and neonatal risks. More rarely, other antibodies have been shown to cause HDFN but are unlikely to cause fetal anaemia.
12	The use of the continuous flow analyser (CFA) compares patient samples against a standard curve of known serum calibrated against a WHO international standard.
13	If a Middle Cerebral Artery Peak Systolic Velocity (MCA-PSV) is found to be above 1.25 Multiples of Median (MoM), it indicates significant fetal anaemia.
14	Intravenous immunoglobulin (IVIG) has not been shown to reduce the likelihood of progressing to exchange transfusion.
15	Birth haemoglobin was significantly lower in severely affected neonates (133 g/L, SD=29) compared to the non-affected group (168 g/L, SD=29).
16	There was no significant correlation between HDFN severity and preterm delivery, with only 14 of 22 preterm neonates being affected.
17	There is a suggestion that the degree of anti-D fucosylation could be measured and used to diagnose HDFN and subsequently guide management.
18	Current UK transfusion guidelines for women of childbearing age advise women receive blood that has been RhD and Kell matched to reduce the risk of alloimmunisation.
19	Provision of a standardised technique and scoring system allows the comparison of titre values to guide clinical practice.
20	The Fetal Medicine team involved in this study initiates an investigation when there is evidence of an anti-D concentration >4.0 IU/mL or an anti-c concentration >7.5 IU/mL.

T cell clonality assessment: past, present and future. Mahe E, Pugh T, Kamel-Reid S. *J Clin Pathol* 2017 Oct 21. pii: jclinpath-2017-204761. doi: 10.1136/jclinpath-2017-204761. (Epub ahead of print) http://jcp.bmj.com/content/jclinpath/early/2017/10/21/jclinpath-2017-204761.full.pdf Assessment No: 020718

01	Lymphocyte maturation is marked by immunophenotypic changes as well as discrete and regulated molecular events.
02	T cells play a dominant role in cell-mediated immunity.
03	T-cell antigen specificity is mediated through the T-cell receptor (TCR).
04	TCR assays provide no molecular genetic evidence of clonality in malignant or suspect lymphoproliferative disorders.
05	Clonality definitely serves as evidence that an apparently malignant lymphoid process with definite immunophenotypic lineage specificity is likely of B-cell origin.
06	Mature but non-self-antigen naïve T cells will not home to lymphoid tissues to await subsequent antigenic stimulation.
07	There are more than four types of TCR protein monomers in humans.
08	The vast majority (>95%) of circulating T cells are of the α/β type.
09	The thymus contains epithelial and antigen-presenting cells responsible for exposing naïve T cells to a variety of antigens.
10	Clonality may be used as a means of minimal residual disease (MRD) testing.
11	*TCR* gene rearrangement begins in the germline reconfiguration, followed by *V-DJ* gene rearrangement and finally by *D-J* gene rearrangement.
12	The T-cell receptor alpha (TRA) locus is found on the short arm of chromosome 14 in band 14p12.1.
13	The TRG locus spans 160 kb.
14	The primary sources of interplatform variation relate to the sequencing reaction media and chemistry but not the methods of detection.
15	Given that stepwise rearrangement of all four TCR loci is possible in a given T-cell clone, definitive TCR clonotyping requires sequencing of rearranged *TCR* gene transcripts.
16	The additional non-functional or non-expressed rearrangements can serve as additional parameters in the definition of a T-cell population's TCR genomic fingerprint.
17	The large size of the TRA locus does not prevent a complete assay of the *TRA* gene.
18	The first TCR clonality assays employed the use of restriction enzyme digestion of query DNA, followed by gel electrophoresis and Southern blotting using probes for the known *TCR* genes.
19	Current TCR clonality assays require a recommended input of 50–100mg of DNA to multiple individual reactions.
20	It is not conceivable that future clinical need for T-cell clonality assessment will be dominated by immunotherapeutic indications, rather than diagnostic ones.

REFLECTIVE LEARNING

01	How does this paper reflect the findings of studies in other countries, and in what way could these findings have been predicted?
02	This paper reflects largely upon HDFN caused by anti-D, anti-c and anti-K. What other specificities are associated with clinically significant HDFN, albeit much less frequently?
01	Consider the histological appearance and immunocytochemistry profile that make you want to request TCR rearrangement studies.
02	What might be the patient treatment for T-cell lymphoma?