

Histocompatibility and Immunogenetics

Part 1 Paper 2

Sample short answer questions

Sample question 1

Patient 'Mrs X', has been referred to your local transplant team as a potential candidate for a haematopoietic stem cell transplant. She has been diagnosed with 'AML'. The patient has no siblings or other related donors living within the UK. Her HLA type is defined as follows:

HLA-A*01:01, *23:01;
HLA-B*44:03, *14:02;
HLA-C*08:02, *16:01;
HLA-DRB1*04:04, *07:01;
HLA-DRB4*01;
DQB1*02:02, *03:02;
DPB1*04:01, *13:01

Mrs X is also reported as CMV positive, blood group A positive and weighs 60kg.

a) Define AML and briefly describe how this disorder is diagnosed. [2 marks]

A search of the UK and international unrelated donors identifies no suitable matched donor and a cord blood transplant option is considered. The cords in the following table have been shortlisted for transplantation.

ID	NC/kg	CD34/kg	HLA-A	HLA-B	HLA-C	HLA-DRB1
A	3.81	0.6	01:XX 23:XX	14:02 44:03	08:XX 16:XX	04:01 15:01
B	2.95	1.02	01:01 03:01	07:02 44:03	07:02 16:01	04:04
C	4.34	1.69	25:01 23:01	14:02 44:03	04:01 08:02	07:01 15:01
D	2.39	1.72	01:01	44:03 51:01	16:01 15:02	04:04 07:01
E	2.28	0.79	01:01	44:03	04:01 16:01	04:04 07:01

c) For each of the cords listed above describe their level of matching with the patient: [10 marks]

Cord ID	Level of matching compared to patient
A	
B	
C	
D	
E	

d) Select a cord transplant option for this patient. Describe why you have made your selection. [8 marks]

Sample question 2

a)	Give a brief definition of ankylosing spondylitis. [3 marks]
b)	Genetic susceptibility to ankylosing spondylitis (AS) is associated with the HLA-B*27 group of alleles. Name two B*27 alleles that are associated with AS and name two B*27 alleles that have either weak or no association. [4 marks] <u>AS associated alleles:</u> <u>AS weak or no association alleles:</u>
c)	Briefly outline two hypotheses to explain the association between HLA-B27 and ankylosing spondylitis. [8 marks]
d)	Name one other gene that has been implicated in the genetic susceptibility to ankylosing spondylitis and describe how disease susceptibility may be modulated by this gene. [5 marks]

Sample question 3

<p>A patient with Aplastic Anaemia presents with a platelet count of $10 \times 10^9/l$ and has not incremented to two random donor platelet transfusions. The patient requires long-term platelet transfusion support.</p>	
a)	<p>Name two immune and two non immune potential causes for the failure to increment [4 marks]</p> <p>Immune 1:</p> <p>Immune 2:</p> <p>Non immune 1:</p> <p>Non immune 2:</p>
b)	<p>What tests would you routinely perform to diagnose immune mediated refractoriness and what technology would you use [4 marks]</p>
c)	<p>If tests support a diagnosis of immune mediated refractoriness how would you select matched platelets for transfusion [4 marks]</p>
d)	<p>What monitoring would you advise? [2 marks]</p>
e)	<p>Describe the principles of sensitisation from random platelet transfusions [4 marks]</p>
f)	<p>Name two other clinical conditions associated with platelet specific alloantibodies [2 marks]</p> <p>1.</p> <p>2.</p>

Sample question 4

a)	<p>Patient Mrs E has end stage renal failure and is being worked up for activation on the deceased donor kidney transplant list. Describe two H&I tests that must be undertaken before Mrs E can be listed. [4 marks]</p> <p>1)</p> <p>2)</p>
c)	<p>Patient Mrs E has now been waiting for a deceased donor kidney offer for two years. Mrs E realises that she will gain “points” based on her waiting time. There are six other elements that are also taken into consideration for the points-based deceased kidney allocation process within the UK. List the six other elements that are scored below [6 marks]</p> <p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p> <p>5)</p> <p>6)</p>
d)	<p>Patient Mrs E receives an offer of an kidney from a DBD donor Define and describe the differences between DBD and DCD donors [4 marks]</p>
<p>Mrs E’s HLA type: A*32; B*07,*08; Bw6; C*07,*07; DRB1*01, *15; DRB5*01; DQB1*05,*06</p> <p>DBD Donor’s HLA type: A*02,*32; B*07,*44; Bw4,Bw6; C*07,*16; DRB1*01,*15; DRB5*01; DQB1*05,*06; DPB1*04:01</p>	
e)	<p>What are the HLA mismatches? [2 marks]</p>

f) What is the match grade as used by ODT for organ allocation.? [1 mark]

Mrs E's HLA alloantibody screening history is given below

Serum date	Test	Manufacturer	Result
29/08/2015	Luminex ID class I	One Lambda	negative
	Luminex ID class II	One Lambda	negative
03/10/2015	Luminex ID class I	One Lambda	negative
	Luminex ID class II	One Lambda	negative
05/01/2016	Luminex ID class I	One Lambda	negative
	Luminex ID class II	One Lambda	negative
17/04/2016	Luminex ID class I	One Lambda	negative
	Luminex ID class II	One Lambda	negative
03/05/2016	Not tested		
02/08/2016	Luminex class I and II screen	One Lambda	Negative for both class I and II
06/09/2016	Not tested		
04/10/2016	Luminex class I and II screen	Lifecodes	Negative for both class I and II
06/12/2016	Luminex class I and II screen	Lifecodes	Negative for both class I and II
07/02/2017	Luminex class I and II screen	Lifecodes	Negative for both class I and II
04/04/2017	Luminex ID class I	One Lambda	negative
	Luminex ID class II	One Lambda	negative
16/08/2017 Day of transplant offer	Not tested	Not tested	

g) What tests should be performed prior to the transplant proceeding? [3 marks]