Higher Specialist Diploma

Immunology

Examination 2018

Paper 3

Discipline-specific questions

120 minutes

Attempt 3 out of 6 questions

Instructions to candidates

1. Record your candidate number, qualification title and where appropriate the discipline and examination paper number on the front sheet of the answer booklet
2. Record your candidate number and the page number in the spaces provided on the answer sheets
3. Begin each new answer on a new page
4. Write on one side of the answer sheet only
5. Each question is worth 100 marks
1. Critically appraise different approaches for the investigation of Anti Neutrophil Cytoplasmic antibodies [ANCA].

2. Discuss the role of laboratory tests in the diagnosis of specific antibody deficiency.

3. Discuss the strategies for the measurement and monitoring of patients on monoclonal antibody therapies

4. Critically appraise different approaches for the in vitro investigation of nut allergy.

5. Discuss the laboratory tests which you would use to investigate a patient with a suspected complement deficiency.

6. Discuss the internal quality control of flow cytometry within the Immunology laboratory
Higher Specialist Diploma

Immunology

Examination 2018

Paper 4

Case studies

120 minutes

Attempt all case studies

Instructions to candidates

1. Record your candidate number, qualification title and where appropriate the discipline and examination paper number on the front sheet of the answer booklet
2. Record your candidate number and the page number in the spaces provided on the answer sheets
3. Begin each new answer on a new page
4. Write on one side of the answer sheet only
5. Each case study is worth 100 marks
**Seen Case Study**

1. Boy born at 35 weeks with a low birth weight of 1.9kg and low length of 44cm. Both of his parents had type II diabetes and father had psoriasis and his mother autoimmune thyroiditis.

At two months he was failing to thrive and presented with generalised lymphadenopathy, hepatosplenomegaly.

At three years he developed autoimmune thyroiditis and immune thrombocytopaenia. He also suffered from recurrent respiratory infections.

At 7 years old his height was 103cm, well below average. He was suffering from persistent giardia infections.

A lymphocyte panel was set up by flow cytometry, results are in the table below with comments on the plots.

<table>
<thead>
<tr>
<th>% Lymphocytes</th>
<th>Cells/ uL</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T Cells [CD3+]</td>
<td>83</td>
<td>1081</td>
</tr>
<tr>
<td>T Cells [CD4+]</td>
<td>30</td>
<td>386</td>
</tr>
<tr>
<td>T Cells [CD8+]</td>
<td>46</td>
<td>591</td>
</tr>
<tr>
<td>B Cells [CD19+]</td>
<td>13</td>
<td>170</td>
</tr>
<tr>
<td>NK [CD56+16]</td>
<td>3</td>
<td>39</td>
</tr>
</tbody>
</table>

**Comments:**
- Increased double negative alpha/beta T cells.
- Reversed CD4/8 ratio
- Increased activation [HLA-DR 59%]

a. Looking at the results and the clinical symptoms discuss the differential and explain with reasons the likely diagnosis. (30 marks)

b. Discuss the main clinical symptoms which are associated with this disease. (20 marks)

c. What are the main laboratory findings you would find in this disease? (20 marks)

d. Explain what treatments are available? (20 marks)

e. What follow up laboratory tests would you use to confirm this? Justify your decision. (10 marks)
Unseen Case Studies

2. A 16 year old girl with no previous past medical history presented to her GP after returning from her holiday at the beach. She had developed a red rash on her cheeks and over the bridge of her nose. She was referred on to the children’s hospital where she was asked about any other problems she had noticed. She stated that when she woke up in the morning her finger joints and hips were stiff.

A blood sample was taken to test for anti-nuclear antibodies, this was positive to a titre of 1:1280. Enlarged lymph nodes were felt behind her ears and in her neck. She was told to avoid direct sunlight and was advised to take an anti-malarial agent (hydroxychloroquine).

a. Interpret the results and explain the likely diagnosis? (10 marks)

b. Which further tests would you recommend? Justify your decision. (20 marks)

c. Explain why was she told to avoid direct exposure to sunlight? (10 marks)

d. To assess renal function the patients urine was tested, which was negative, explain the significance of this. (20 marks)

e. Subsequent testing revealed a raised serum IgG level. How can this be explained? (30 marks)

f. What would you expect to see if you looked at a biopsy of the patients swollen lymph nodes? (10 marks)
3.
A 28-year-old woman was admitted with a stroke due to a cerebral vascular thrombosis. She had had three spontaneous abortions in the past. She was a non-smoker. Cerebral angiography confirmed the thrombosis but showed normal vasculature otherwise.

Haemoglobin, platelet and white cell counts were normal, as were her serum immunoglobulins, C3 and C4 levels. Antibodies to nuclei, extractable nuclear antigens and double-stranded DNA were negative.

a. Interpret the results and explain the likely diagnosis? (10 marks)

b. What further laboratory tests would be required to confirm this? Justify your decision. (30 marks)

c. Critically appraise the classification of the syndrome. (50 marks)

d. Explain what treatment is available? (10 marks)