2.19  Cyclophosphamide PBSC Mobilisation

**Indication**

Mobilisation of peripheral blood stem cells for future stem cell rescue following high dose chemotherapy for non-Hodgkin’s Lymphoma, Hodgkin’s disease, multiple myeloma and acute leukaemias.

**Pre-treatment Evaluation**

- Document disease stage at diagnosis and current remission status.
- Record current height, weight and surface area.
- Review FBC, U&E and Creatinine.
- Request formal measurement of urinary Creatinine Clearance.
- Clinical assessment of patient’s cardio-pulmonary status.
- Give adequate verbal and written information for patients and relatives concerning patient’s disease, treatment strategy and side effects from mobilisation regimen.
- Discuss fertility issues with patient and relatives.
- Book harvest date
- Check patient's HBV, HCV, HIV 1&2 and syphilis serology.
- Ensure adequate venous access.
- Patients should receive irradiated blood products from 2 weeks prior until just after the harvest procedure and from 2 weeks before to 6 months after the autograft.

** Issue patient with DOH/National Blood Service Irradiated Blood Products information sheet:**

**Drug Regimen**  (OPCS code: X71.1)

<table>
<thead>
<tr>
<th>Day</th>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Mesna</td>
<td>2g/m² BD (x 4 doses)</td>
<td>IV</td>
<td>(Start 1 hour before Cyclophosphamide) and run each infusion over 12 hours</td>
</tr>
<tr>
<td>1 and 2</td>
<td>Cyclophosphamide</td>
<td>2g/m²</td>
<td>IV</td>
<td>Infusion in 500mls-1000mls 0.9% NaCl over 1 to 2hrs.</td>
</tr>
<tr>
<td>3</td>
<td>Ciprofloxacin</td>
<td>500mg BD</td>
<td>Oral</td>
<td>From day 3 until day of harvest</td>
</tr>
<tr>
<td>5 onwards</td>
<td>G-CSF (filgrastim or lenograstim according to local policy)</td>
<td>Refer to local policy</td>
<td>SC</td>
<td>Continue daily until day of harvested</td>
</tr>
</tbody>
</table>
Considerations

NB: Additional doses of Mesna 1g IV should be prescribed as required if significant microscopic haematuria is noted.

Fluid Regimen

- Important to maintain at least 3 litres of fluid each day
- Suggested Prehydration: 1000mls 0.9% NaCl + 20mmol KCl given over 6 hours prior to Cyclophosphamide.

Dose Modifications

None; do not use Cyclophosphamide mobilisation if urinary Creatinine Clearance is ≤ 40 ml/min.

Additional Requirements

- Check for microscopic haematuria using urine DipStix at least 6 hourly.
- G-CSF (according to local policy) SC daily from day 5 to harvest (from day 10 onwards). Mobilisation can be delayed in some patients so it is best to give the Cyclophosphamide on a Friday so that day 11 falls on a Monday.
- If required, ensure that blood products transfused within 14 days of harvest are irradiated.
- Ensure adequate venous access for stem cell collection e.g. Vascath.

Assessment of Response

- Check FBC and CD34+ count daily from day 13 onwards.
- Aim for peripheral blood CD34+ count of >50 x 10^6/l (i.e. >1% CD34+ cells with WBC >5 x 10^9/l) before commencing harvest.
- Ideally platelet count >40 x 10^9/l on the days of harvest.

Anti-emetics

This regimen has high emetic potential - refer to local protocol.

Adverse Effects
• Nausea/vomiting.
• Bone marrow suppression, expect nadir in neutrophil count <0.5 x 10^9/l from days 7-10.
• Alopecia.
• Haemorrhagic cystitis.

References

• To LB, Haylock DN, Dowse T et al. A comparative study of the phenotype and proliferative capacity of peripheral blood (PB) CD34+ cells mobilised by four different protocols and those of steady-phase PB and bone marrow CD34+ cells. Blood, 1994,84:2930-9.
• Dreger P, Schmitz N. Sources of stem cells: autografts. In: The EBMT handbook-blood and marrow transplantation, European School of Haematology, 1998:72-86.