BC Cancer Protocol Summary For Modified PCV Chemotherapy Of Brain Tumours Using Procarbazine, Lomustine (CCNU) and vinCRISTine

**Protocol Code**  
CNMODPCV

**Tumour Group**  
Neuro-oncology

**Contact Physician**  
Dr. Brian Thiessen

**ELIGIBILITY:**
- Adjuvant therapy for adult embryonal tumours over age 40, grade 2 oligodendroglioma and astrocytoma
- Adequate hematological, renal and hepatic function

**TESTS:**
- Baseline: CBC and diff, platelets, serum creatinine, ALT, bilirubin, serum glucose (for patients on dexamethasone), anticonvulsant levels
- Before each cycle: CBC and diff, platelets, serum creatinine, ALT, bilirubin
- Day 22: CBC and diff, platelets
  - CBC and diff, ALT, bilirubin, serum creatinine **before** last cycle.
- Imaging: CT or MR every 2\textsuperscript{nd} cycle

**PREMEDICATIONS**
- ondansetron PO 8 mg q12h for 36 hours (starting 30 min before lomustine), then prochlorperazine PO or dimenhyDRINATE PO prn
- dexamethasone PO 8 mg q12h for 36 hours (starting 30 min before lomustine), then prochlorperazine PO or dimenhyDRINATE PO prn
- if patients are nauseated with procarbazine, may divide procarbazine dose or add regular prochlorperazine
**TREATMENT:**

<table>
<thead>
<tr>
<th>Day</th>
<th>Drug</th>
<th>Dose</th>
<th>BC Cancer Administration Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>vinCRISTine</td>
<td>1.4 mg/m² (see below for maximum cap dose)*</td>
<td>in 50 mL NS over 15 mins</td>
</tr>
<tr>
<td>1</td>
<td>lomustine (CCNU)</td>
<td>110 mg/m² at bedtime</td>
<td>PO</td>
</tr>
<tr>
<td>2</td>
<td>procarbazine</td>
<td>60 mg/m²/day, days 2 to 15</td>
<td>PO</td>
</tr>
<tr>
<td>22</td>
<td>vinCRISTine</td>
<td>1.4 mg/m² (see below for maximum cap dose)*</td>
<td>in 50 mL NS over 15 mins</td>
</tr>
</tbody>
</table>

- Adjuvant chemotherapy for primitive neuroectodermal tumour (PNET):
  - Repeat every 6 weeks x 4 to 6 cycles as tolerated
  - Recurrent oligodendrogliomas and mixed gliomas not previously exposed to PCV or with a prior good response to PCV
    - Repeat every 6 weeks x 4 to 6 cycles based on response and tolerability
  - Low grade gliomas, to start two weeks post radiation therapy
    - Repeat every 6 weeks x 6 cycles as tolerated

*For planned treatment greater than 4 cycles, cap vinCRISTine at 2 mg

**DOSE MODIFICATIONS:**

1. **Hematological:** modify lomustine and procarbazine, not vinCRISTine.

For **Day 1/Beginning Cycle counts:**

<table>
<thead>
<tr>
<th>ANC (x10⁹/L)</th>
<th>Platelets (x10⁹/L)</th>
<th>Dose (lomustine, procarbazine)</th>
</tr>
</thead>
<tbody>
<tr>
<td>greater than or equal to 1.5</td>
<td>and</td>
<td>greater than or equal to 100</td>
</tr>
<tr>
<td>1.0 to less than 1.5</td>
<td>and/or</td>
<td>70 to less than 100</td>
</tr>
<tr>
<td>less than 1.0</td>
<td>and/or</td>
<td>less than 70</td>
</tr>
</tbody>
</table>

*For lomustine, this dose becomes the new 100% dose for subsequent treatments*
For **Day 22** counts
- modify Day 1 dosing for the rest of the treatment.
- If Day 22 counts and Day 1 counts are low, the reduction is based on the lowest of the two counts (i.e., if Day 22 counts dictated a 60% dose reduction and the Day 1 counts dictated a 80% dose reduction, then the dose should be lowered to 60%)
- If dose modification is required for the first treatment cycle, reconsider the program's advisability as severe myelosuppression is common in future cycles.
- In patients with low grade gliomas, for undue toxicity switch to CNTEMOZ for remaining cycles

<table>
<thead>
<tr>
<th>ANC ($x10^9$/L)</th>
<th>Platelets ($x10^9$/L)</th>
<th>Dose (lomustine, procarbazine)</th>
</tr>
</thead>
<tbody>
<tr>
<td>greater than or equal to 1.5 and greater than or equal to 100</td>
<td>give 100%</td>
<td></td>
</tr>
<tr>
<td>1.0 to less than 1.5* and/or 75 to less than 100*</td>
<td>give 80%</td>
<td></td>
</tr>
<tr>
<td>less than 1.0* and/or less than 75*</td>
<td>give 60%</td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: Patients with these variables should have careful monitoring (at least twice a week) of WBC and platelet counts. Trimethoprim/sulfamethoxazole DS one tablet po q Monday, Wednesday and Friday is recommended for patients requiring dexamethasone for longer than 4 weeks. Platelet TRANSFUSIONS for platelet less than 40 $x10^9$/L and downward trend. Consult contact physician if any questions.

2. **Renal dysfunction**: If creatinine clearance less than 50 mL/min, reconsider treatment program
3. **Hepatic dysfunction**: hold lomustine if ALT greater than 5 x ULN or bilirubin greater than 25 micromol/L until ALT less than or equal to 1.5 x ULN or bilirubin less than 25 micromol/L, then reinstitute at 60% dose.
4. **Respiratory**: Review case
5. **Intolerable side effects**: Re-evaluate treatment. For patients with low grade gliomas, switch to CNTEMOZ for remaining cycles.

**PRECAUTIONS:**
1. **Peripheral neuropathy**: Numbness and tingling of fingers and toes; distal weakness, foot drop; constipation; jaw pain; mild to moderate nausea/vomiting.
2. **Psycho-neurological complaints**: including drowsiness
3. **Pancytopenia**: often prolonged thrombocytopenia; possible renal damage
4. **Neutropenia**: Fever or other evidence of infection must be assessed promptly and treated aggressively
5. **Extravasation**: vinCRISTine causes pain and tissue necrosis if extravasated. Refer to BCCA Extravasation Guidelines
6. **Hypersensitivity**: Reactions are common with procarbazine. Refer to BCCA Hypersensitivity Guidelines. *Hypertensive crisis* if taking MAO-like drugs or foods
high in tyramine - *diet sheet* to be given while on procarbazine. Infrequent allergy to procarbazine includes cough.

Call Dr. Brian Thiessen or tumour group delegate at (604) 877-6000 or 1-800-663-3333 with any problems or questions regarding this treatment program.

References