**Management of Lenalidomide-Associated Cytopenias in Myelodysplastic Syndromes: Practical Take-Aways From Clinical Trials**

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**INTRODUCTION**

- Lenalidomide (LEN) is an oral immunomodulatory medication approved in the United States for the treatment of patients with transfusion-dependent anemia due to low-risk myelodysplastic syndromes (MDS) with del(5q) or with 5q+ or additional cytogenetic abnormalities.
- In clinical trials of LEN in MDS, neutropenia and thrombocytopenia were common; severe myelosuppression was generally managed with dose interruptions and dose modifications rather than discontinuations.
- The majority of patients required 3 or more cycles (months) of LEN treatment before improvement in red blood cell transfusion requirements or achievement of transfusion independence.
- If treatment is discontinued prematurely, patients may not receive sufficient medication to decrease transfusion needs.

**OBJECTIVE**

- To educate advanced practitioners on the expectations and management of LEN-associated thrombocytopenia and neutropenia to improve LEN treatment duration and optimize patient outcomes.

**METHODS**

- For this report, MDS-003 and MDS-004 clinical trial data were applied to real-world patient care to illustrate expected cytopenias and outline strategies for practical management of LEN-related cytopenias in MDS patients.
- MDS-003: a phase 2, multicenter, single-arm study (N = 148).
- Rates, time to onset/recovery, and LEN dose modifications and discontinuation due to neutropenia or thrombocytopenia were examined.

**RESULTS**

- These data and expert experience were used to prepare a guide for management of cytopenias in LEN-treated MDS patients relevant to advanced practitioners in oncology.

**CONCLUSIONS**

- LEN-associated cytopenias can often be managed effectively with dose modifications and supportive care without the need for treatment discontinuation.
- Severe cytopenias typically occur within the first 8 weeks of LEN treatment and decrease thereafter.
- Sustained moderate cytopenias may be observed over periods of months or years in LEN-treated patients with MDS but do not require dose modification in the absence of symptoms.
- This is unlike other malignancies in which neutropenia and thrombocytopenia are significant events requiring treatment discontinuation.
- Advanced practitioners can manage LEN-associated cytopenias through:
  - Familiarity with expected cytopenias
  - Planning for effective management
  - Setting expectations for the patient and family
- This will promote continued LEN therapy in patients with MDS to help achieve optimal clinical benefits.

**REFERENCES**


**DISCLOSURES**

- JAR: ST: no disclosures
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**Table 1: LEN-Associated Cytopenia Expectations and Management by Treatment Cycle**

<table>
<thead>
<tr>
<th>Treatment Cycle</th>
<th>First 8 Weeks</th>
<th>&gt; 8 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 3/4 Neutropenia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEN Action Taken, n (%)</td>
<td>20 (21.7%)</td>
<td>30 (32.9%)</td>
</tr>
<tr>
<td>Discontinuation</td>
<td>10 (3)</td>
<td>6 (2)</td>
</tr>
<tr>
<td><strong>Grade 4 Thrombocytopenia</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

**Advanced Practitioner Considerations**

- A complete blood count with differential and platelet count is suggested weekly.
- Severe cytopenias were managed primarily with dose modifications rather than discontinuation.
- Intervention, dose modification, or discontination is not required for sustained cytopenias of moderate severity in quality of life.
- In treatment cycles ≥ 2, ANC counts are low as 500 µL, for ≥ 7 days and platelet counts are low as 30,000/µL do not require dose adjustment.
- Continuation of therapy is recommended for patients who respond to LEN until irreversible fatigue or disease progression.

**PI Guidelines**

- If neutrophils develop within 4 weeks of starting LEN treatment, treat with LEN and modify or continue supportive care.
- If platelets develop within 4 weeks of starting LEN treatment, treat with LEN and modify or continue supportive care.

**Figure:**

- Table 1: LEN-Associated Cytopenia Expectations and Management by Treatment Cycle.
- Advanced Practitioner Considerations.
- PI Guidelines.

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