A Descriptive Study of Immune Checkpoint Inhibitors in the Home Infusion Setting

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Introduction / Background

Immune checkpoint inhibitors (ICIs) work by blocking immune checkpoint pathways, that is, promoting immune-mediated tumor cell death. Pembrolizumab (Keytruda®), nivolumab (Opdivo®), and ipilimumab (Bristol) are among some of the ICI agents. CTLA-4 ligands, receptor blockers indicated for the treatment of high-risk, persistent, or metastatic cancers. ICIs are advantageous in their versatility, high potency, and greater survival time and clinical efficacy among patients. However, they are associated with various adverse reactions, including immune-mediated and hypertensive reactions.

In comparison to traditional chemotherapy, ICIs exhibit variable onset and prolonged duration. PD-1 inhibitors such as pembrolizumab and nivolumab display local T-cell modulation on tumor cells and inflammatory tissue, translating to decreased toxicological effects. Conversely, CTLA-4 inhibitors such as ipilimumab exhibit a more widespread T-cell activation in the lymph node, leading to higher rates of toxicity. Because of the myriad oncologic indications, administration versatility, and adverse event profile, collecting baseline data may aid in developing the framework for standardized care plans that will solidify ICIs as a safe and accessible home infusion therapy.

Results

Data was collected and analyzed from 42 patients across 21 sites who received ICI therapy. The data includes baseline characteristics, diagnoses, therapy type, reasons for discharge, and adverse events reported. It is reported in terms of frequency and percent.

Purpose / Background

This is a retrospective study utilizing electronic medical records between January 1, 2020 and September 30, 2022. Data collection included baseline characteristics, diagnosis, therapy type, reasons for discharge, and adverse events reported. Data is reported in terms of frequency and percent.

Original Research Study Methods

This was a retrospective study utilizing electronic medical records between January 1, 2020 and September 30, 2022. Data collection included baseline characteristics, diagnosis, therapy type, reasons for discharge, and adverse events reported. Data is reported in terms of frequency and percent.

Results

Data was collected and analyzed from 42 patients across 21 sites who received ICI therapy (Table 1). ICI therapy was received by both male and female patients across multiple age groups. Male patients received ICIs more frequently than female patients. Table 2 shows the types of ICIs received by patients. Pembrolizumab was most commonly dispensed (n=19, 45%), followed by nivolumab at varying doses and durations. Three patients received nivolumab and ipilimumab, another patient received pembrolizumab and paclitaxel, and one patient received pembrolizumab for 10 months with delayed infusion. There was no association between delayed infusion and adverse events.

As seen in Figure 1, therapy type was the most common reason for discharge. Two patients (4.7%) were discharged due to other reasons. Of the 42 patients, 15 were discharged at home, and 27 were discharged to a hospital. Seven patients were discharged to a hospital due to delayed infusions, and one patient was discharged due to adverse events. Of the eight delayed infusions, five patients received pembrolizumab (62.5%). Two patients were discharged for reasons unrelated to therapy. Most patients experienced delayed infusions and were hospitalized for reasons unrelated to therapy. There were no reports of severe hypotension or anaphylaxis.

Discussion

ICIs are a novel and adaptable oncologic therapy. This data provides baseline information on the use of these agents in the home infusion setting. There were no major safety events in this study.

Conclusions

Two patients were hospitalized with delayed infusions. Eight patients experienced delayed infusions (19%). Of the eight delayed infusions, five patients received pembrolizumab (62.5%). Two hospitalized patients received pembrolizumab alone and were hospitalized for reasons unrelated to therapy. Of the 42 patients, 15 were discharged at home, and five were given prednisolone. There were no reports of severe hypotension or anaphylaxis.

References


Disclosures

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: Vahini Sundararaman; Christopher Roy; Maria Giannakos; Alex Pitsakis. Nothing to disclose.

Table 1 - Summary of Demographic Information

<table>
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<tr>
<th>Gender</th>
<th>Pembrolizumab</th>
<th>Nivolumab</th>
<th>Pembrolizumab + Nivolumab</th>
<th>Nivolumab + Ipilimumab</th>
<th>Pembrolizumab + Other Chemotherapy</th>
<th>Nivolumab + Ipilimumab</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>22 (52.3%)</td>
<td>16 (38%)</td>
<td>4 (9.5%)</td>
<td>3 (7%)</td>
<td>3 (7%)</td>
<td>2 (4.7%)</td>
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<tr>
<td>Female</td>
<td>20 (47.6%)</td>
<td>14 (32%)</td>
<td>7 (16.7%)</td>
<td>4 (9.5%)</td>
<td>4 (9.5%)</td>
<td>2 (4.7%)</td>
</tr>
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Figure 1 - Therapy Type

- Pembrolizumab: 45%
- Nivolumab: 43%
- pembrolizumab + Nivolumab: 3%
- Nivolumab + Ipilimumab: 7%
- Pembrolizumab + Other Chemotherapy: 1%
- Nivolumab + Ipilimumab: 2%

Figure 2 - Reasons for Discharge

- Switched provider: 37.1%
- Other: 15.9%
- Nivolumab: 11.9%
- Pembrolizumab: 2.5%
- Delayed infusion: 2.5%

Figure 3 - Delayed Infusions vs Hospitalizations among ICI Therapies

- Pembrolizumab: 2.5%
- Nivolumab: 5.7%
- Pembrolizumab + Nivolumab: 33.3%
- Nivolumab + Ipilimumab: 11.9%
- Pembrolizumab + Other Chemotherapy: 9.5%
- Nivolumab + Ipilimumab: 2.5%