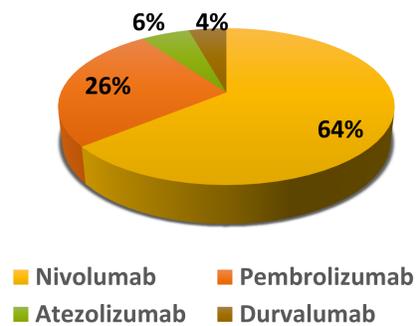


Anannya Patwari¹, Vineel Bhatlapenumarathi¹, Antoine Harb²
 Northern Light Eastern Maine Medical center, Bangor, Maine
 Northern Light Cancer Institute, Brewer, Maine

Abstract

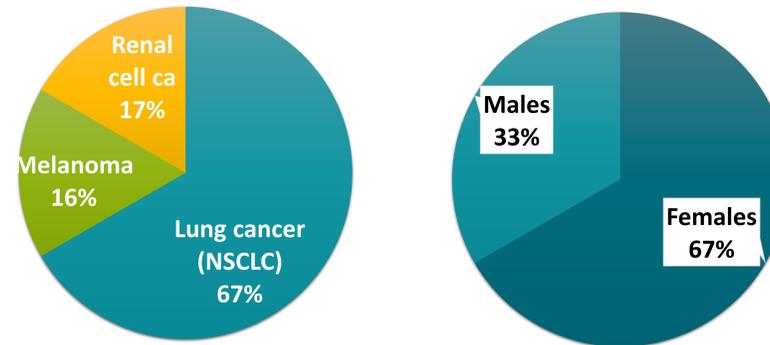
Serious neurological side effects in patients with cancer who are receiving Immune checkpoint inhibitors (ICI) are relatively uncommon with incidence of less than 1%. Transient motor and sensory neuropathies are the most common. We conducted a retrospective chart review analysis of patients with cancer who received nivolumab, pembrolizumab, atezolizumab or durvalumab from 2015 till early 2019, at our institution. Among the patients who received immunotherapy, we identified those who developed serious neurological toxicities requiring treatment interruption or discontinuation. We identified 465 patients, 298 received nivolumab, 121 pembrolizumab, 20 durvalumab and 26 atezolizumab. A total of 6 patients (1.2%) developed serious neurological side effects. Five received nivolumab and 1 pembrolizumab. Among nivolumab recipients, 2 developed Lambert-Eaton myasthenic syndrome (LEMS), 1 had flare of an underlying Multiple Sclerosis, 1 developed optic neuritis and 1 developed immune cervical radiculopathy. The patient on pembrolizumab developed Guillain-Barre syndrome. The malignancies treated included lung (66%), melanoma and renal cell. 5 out of 6 (83%) patients developed serious side effects before the 3rd cycle of the drug requiring permanent treatment discontinuation. Symptoms did improve after treatment with steroids and intravenous immunoglobulins (IVIG). In the remaining patient, treatment had to be held for 4 weeks and then resumed without recurrence of side effects. Serious neurological toxicities in patients receiving ICI are relatively uncommon, but if they develop, treatment will most likely be permanently discontinued in the majority of patients. With timely diagnosis and appropriate management, most patients experienced neurological improvement

Introduction



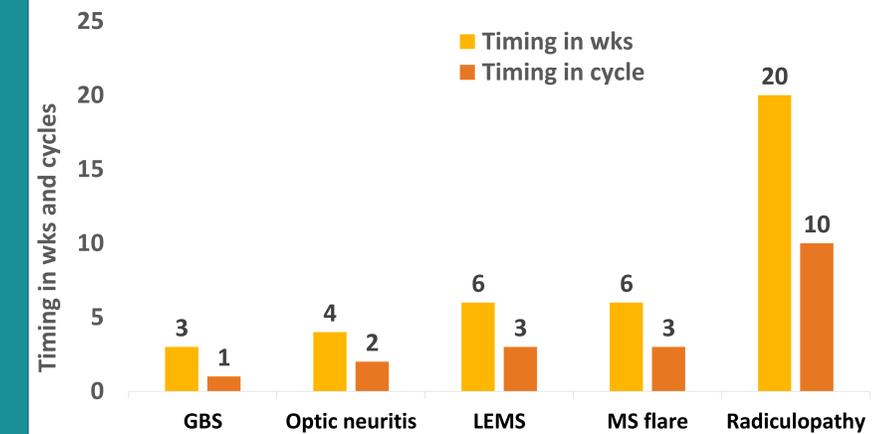
- The pie chart illustrates the % of patients who received the particular drug.
- We had a total of 465 patients who received ICIs at our institution from 2015 till early 2019. Majority of them received Nivolumab followed by Pembrolizumab, Atezolizumab and Durvalumab respectively

Underlying malignancy & demographics



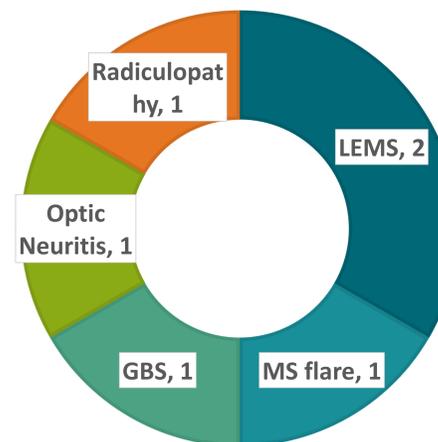
- The above charts illustrates the underlying malignancies that were treated with ICIs and demographic distribution
- Lung cancer was the most common malignancy that was treated with ICI in our population who developed serious neurological irAEs.
- Average age of patients who developed neurological irAEs is 55 yrs

Timing of irAEs



- The above graph illustrates the distribution of irAEs with regards to the cycle of the timing in weeks of ICI treatment.
- 5 out of 6 developed irAEs before the 3rd cycle of treatment which necessitated permanent discontinuation of treatment.

Serious Neurological irAEs



- The above chart illustrates the type of serious irAEs developed in our study population.
- Out of the 6 who developed irAEs 5 received Nivolumab and 1 received Pembrolizumab.
- Patient on pembrolizumab developed GBS

Treatment

- 5 out of 6 patients required permanent discontinuation of the drug due to severity of side effects.
- Nivolumab was held in 1 patient with radiculopathy for 4 weeks and upon resumption with same dose was tolerated well.
- In all the patients symptoms improved with discontinuation of the drug.
- Treatment was with IVIG and /or steroids which improved the symptoms.

Conclusion

- Serious Neurological irAEs in patients receiving ICI are relatively uncommon, but if they develop treatment will most likely be permanently discontinued in majority of patients due to the severity of irAEs
- With timely diagnosis and appropriate management most patients experience neurological improvement as in our study population