Introduction:
- Pembrolizumab is a useful immunotherapy that has become more prevalent in the treatment of certain types of cancer.
- This medication works by competitively binding the PD-1 receptor on lymphocytes and preventing checkpoint inhibition by cancer cells.
- This has proven particularly useful in the treatment of non-small cell lung cancer and melanoma.

Case:
- 73-year-old female with a history of lung cancer presented to the hospital with one week of gradually worsening weakness, polydipsia and polyuria.
- Oncologic history: stage IV RUL lung adenocarcinoma, status post four cycles of palliative chemotherapy and ten fractions of palliative radiotherapy.
- Five months prior to presentation, she was started on pembrolizumab in response to disease progression on imaging.
- In the ED, she was hyperglycemic, with elevated beta hydroxybutyrate and anion-gap metabolic acidosis on labs.
- She was admitted to the medical intensive care unit for an insulin drip, electrolyte correction and robust IV hydration.

Hospital Course:
- No known history of diabetes mellitus nor metabolic syndrome.
- Glycohemoglobin on admission was 7.9
- Endocrinology consulted to assist in workup
- TSH and free T4 were normal
- AM cortisol was normal
- AM ACTH was normal
- GAD antibodies, islet cell antibodies, and insulin antibodies were all negative
- Patient was treated per ICU DKA protocol and was ultimately transitioned off the insulin infusion to basal-bolus insulin
- Diabetic education was provided to the patient
- The patient was discharged to home in stable condition on a new basal-bolus insulin regimen.

Discussion:
- Pembrolizumab is associated with the induction of multiple endocrinopathies, most commonly hypothyroidism, hyperthyroidism and diabetes mellitus.
- Pembrolizumab induced diabetes mellitus was only reported in 0.1% of patients in initial clinical trials but has been reported as high as 1.8% in the literature.
- A significant portion of patients who developed diabetes presented with diabetic ketoacidosis at the time of diagnosis.
- Many patients on pembrolizumab who develop diabetes have apparent β-cell failure without detectable auto-antibodies.
- Thus, checkpoint inhibitor-associated diabetes mellitus (CIADM) is recognized as a distinct presentation of new onset diabetes mellitus.
- Literature offers conflicting reports on whether known HLA genotypes associated with autoimmune type 1 diabetes mellitus offer prognostic benefit for CIADM.
- Regular glycemic monitoring is therefore essential for surveillance in patients initiated on pembrolizumab therapy.

References: