A Phase 2 study of autologous tumor infiltrating lymphocytes (TIL; lifileucel [LN-144]/LN-145) in patients with solid tumors

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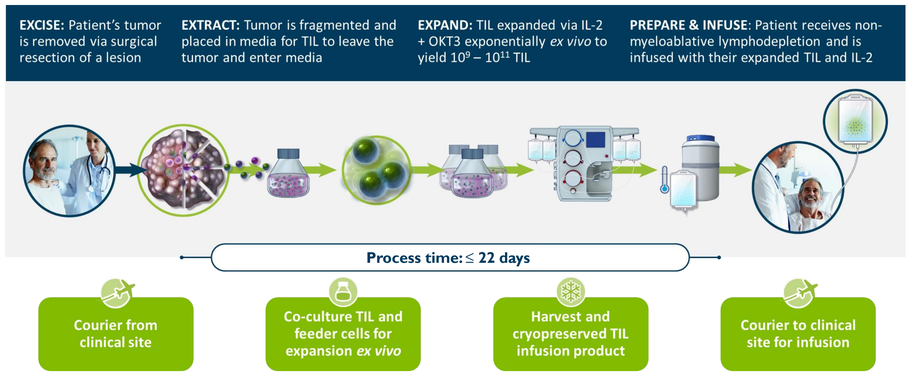
BACKGROUND

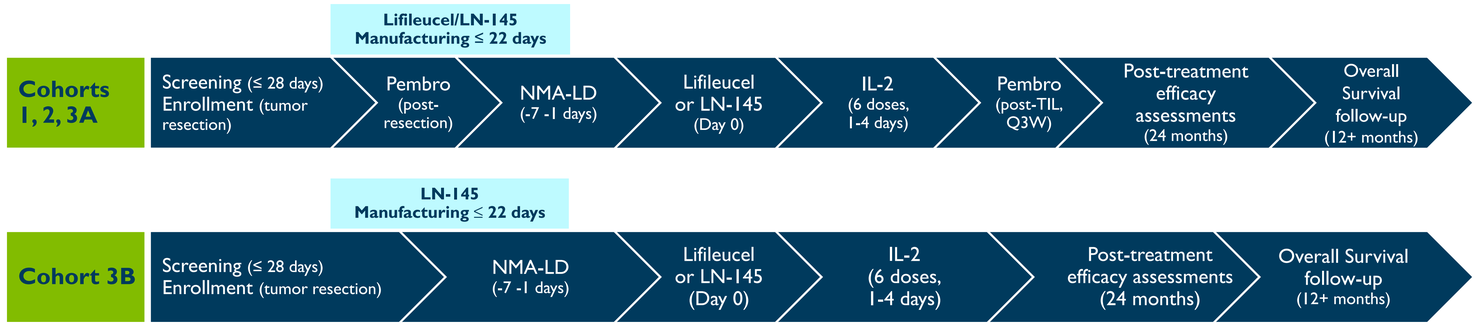
- Metastatic melanoma, head and neck squamous cell carcinoma (HNSCC), and non-small cell lung cancer (NSCLC) are prevalent solid tumors with a combined incidence of 389,000+ and 177,000+ deaths worldwide annually[1]
- Although initial treatment may provide an initial response, duration of response (DOR) is generally short and OS is poor[5-7]
- Tumor infiltrating lymphocytes (TIL) have demonstrated durable complete responses in immunogenic tumors with high mutational burden; the presence of TIL in tumor specimens has been correlated with patient outcome[8-10]
- Pembrolizumab may support trafficking into the tumor prior to and may enhance expansion and efficacy post-TIL infusion by dampening TME suppressor mechanisms[12-14]
- This study was designed to evaluate the efficacy and safety of lifileucel and LN-145 either alone or in combination with pembrolizumab in patients with solid tumors

Fig 1. Iovance Cryopreserved lifileucel & LN-145 Manufacturing Process



Manufacturing process results in TIL infusion product of polyclonal autologous TIL cells

STUDY FLOWCHART



Abbreviations: NMA-LD = nonmyeloablative lymphodepletion; IL-2 = interleukin-2

- TIL is preceded by NMA-LD with cyclophosphamide (60 mg/kg x 2 days) and fludarabine (25 mg/m^2 x 5 days), and followed by 6 doses of IL-2 (600,000 IU/kg)
- Patients in Cohort 1, 2 and 3A receive an initial dose of 200 mg IV pembrolizumab between tumor resection and initiation of NMA-LD and continue to receive 200 mg IV pembrolizumab following IL-2 completion for 24 months or until disease progression or unacceptable toxicity

IOV-COM-202 STUDY OBJECTIVES

Primary:
- Objective response rate (ORR) per RECIST 1.1
- Safety evaluation

Secondary:
- Duration of response (DOR), disease control rate (DCR), progression free survival (PFS)
- Complete response (CR) rate and Overall Survival (OS)

Exploratory:
- Persistence of lifileucel or LN-145, along with other immune correlates which may affect response, outcome, and toxicity
- Efficacy per irRECIST
- Health-related quality-of-life (HRQoL)

* *Primary and secondary objective results will be analyzed independently for each cohort*

SUMMARY

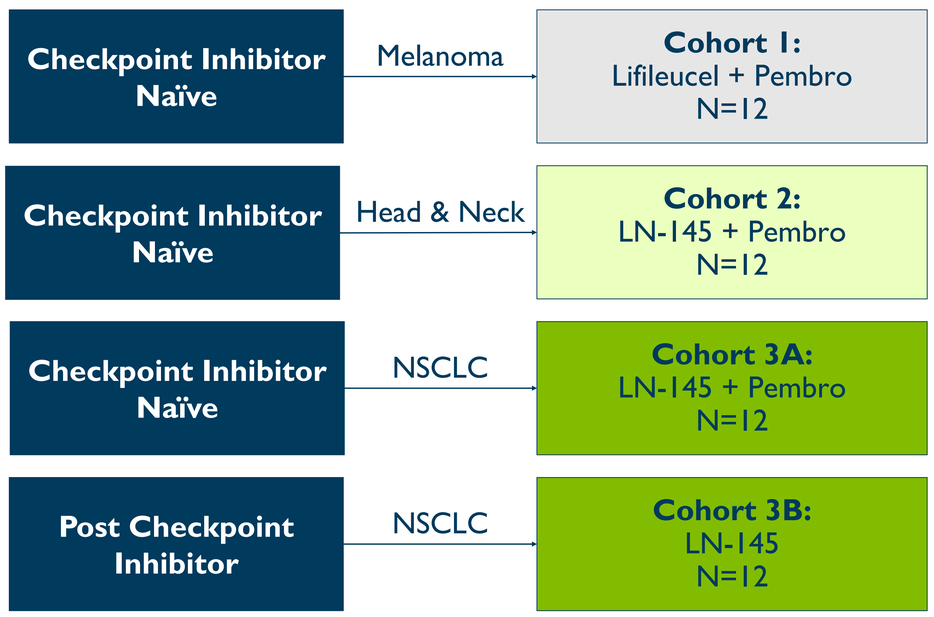
- Advanced solid tumors in patients with Melanoma, HNSCC and NSCLC represent a high unmet medical need with low survival rates and limited effective treatment options
- The presence of TIL has been correlated with improved outcomes in a number of solid tumors
- TIL have demonstrated efficacy in multiple solid tumors resulting in durable long-term response
- This study aims to assess lifileucel and LN-145 as first-line combination therapy with pembrolizumab for patients with Melanoma, & HNSCC, and either alone or in combination for the treatment of patients with NSCLC
- For patients with multiple solid tumors, TIL may provide durable tumor control with a single treatment

Disclosure

This study and poster are sponsored by Iovance Biotherapeutics, Inc. San Carlos, CA, USA

STUDY DESIGN

Figure 2. A Phase 2, Multicenter Study of Autologous Tumor Infiltrating Lymphocytes (lifileucel or LN-145) in Patients with Solid Tumors (NCT03645928)



MAJOR INCLUSION & EXCLUSION CRITERIA

Key Inclusion Criteria
- Histologically/cytologically confirmed diagnosis of:
  - Cohort 1: Stage IIIC IV melanoma
  - Cohort 2: unresectable, recurrent or metastatic HNSCC
  - Cohort 3: Stage III or Stage IV NSCLC
- At least 1 tumor lesion resectable for TIL generation
- A remaining lesion measurable for RECIST 1.1/irRECIST response assessment
- 18 years or older
- ECOG performance status 0 or 1
- Adequate bone marrow and organ function

Key Exclusion Criteria
- Prior cell therapy
- Symptomatic and/or untreated brain metastases
- Prior immunotherapy for combination cohorts
- Active or prior documented autoimmune or inflammatory disorders or active infections
- Primary or acquired immunodeficiency
- History of hypersensitivity to any components of TIL therapy
- LVEF < 45% or NYHA Class II or higher
- History of obstructive or restrictive pulmonary disease
- History of other malignancies, except for curatively treated with no evidence of disease for ≥ 3 years

References

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