Background Components of lipid profile seem to impact differently on phenotype and activity of immune cells in cancer.1,2 Their prognostic role in solid cancer patients treated with immune checkpoint inhibitors (ICIs) is still matter of debate.

Methods We retrospectively collected baseline clinicopathological characteristics including circulating lipid profile [total cholesterol (TC), triglycerides (TGs), low-density lipoproteins (LDL), high-density lipoproteins (HDL)] of consecutive solid cancer patients treated with ICIs and we investigated their impact on clinical outcomes. Cut-off values showing alteration of plasma lipid profile were ≥200 mg/dl for TC, ≥170 mg/dl for TGs, ≥130 mg/dl for LDL, <40 mg/dl for HDL in males, <45 mg/dl for HDL in females.

Results Among 432 patients enrolled, 67% (N=289) were men, 61% (N=266) were diagnosed with advanced non-small cell lung cancer and 86.6% (N=374) of patients were treated with ICIs as monotherapy. Patients’ circulating lipid assessments were described in tables (1–3). At a median follow-up of 46 months, patients with TC≥200 mg/dl showed an improved, although not significant, progression free survival (PFS) (6.61 versus 4.67 months, p=0.4) and longer overall survival (OS) (19.4 versus 10.8 months, p=0.02) compared to those with TC<200 mg/dl. Conversely, patients with TGs≥170 mg/dl showed a shorter PFS (2.8 versus 5.07 months, p=0.006) and OS (5.92 versus 12.99 months, p<0.001) compared to those with TGs<170 mg/dl. Then, we combined TC and TGs in a LIPID-score that identified three subgroups: good risk (GR) (TC≥200 mg/dl and TGs<170 mg/dl), intermediate risk (IR) (TC<200 mg/dl and TGs≥170 mg/dl or TC≥200 mg/dl and TGs≥170 mg/dl) and poor risk (PR) (TC<200 mg/dl and TGs≥170 mg/dl). The median PFS of GR, IR and PR groups was 7.76, 4.18 and 2.40 months, respectively (p<0.001). Moreover, median OS of GR, IR and PR was 20.36, 11.18 and 4.14 months, respectively (p<0.001) (figure 1). At multivariate analyses, after adjusting for baseline performance status, histology, treatment line, sex, statin use, number of metastatic sites and body mass index, the impact of LIPID-score remained significant for both PFS and OS (table 4). Looking at TC components, HDL and LDL, a significant association was detected only for HDL and OS, with patients characterized by higher HDL levels showing longer OS (15.3 vs 10.1 months, p=0.02).

Conclusions LIPID-score seems to strongly define subgroups of patients treated with ICIs with different prognosis. Further mechanistic insights are needed to clarify the prognostic and predictive role of lipid profile components in patients treated with ICIs.

REFERENCES

Ethics Approval Ethical approval to conduct this study was obtained by the respective local ethical committees on human experimentation of each participating center, after previous approval by the coordinating center (‘Comitato Etico Regionale delle Marche – C.E.R.M.’, Reference Number 792). All study related procedures and data collection were conducted in accordance with the Declaration of Helsinki and in accordance with Good Clinical Practice.

Consent Not applicable
Abstract 91 Figure 1  PFS and OS according to LIPID score
GR, good risk; IR, intermediate risk; PR, poor risk