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Incidence of Pneumonitis With Use of Programmed Death 1 and Programmed Death-Ligand 1 Inhibitors in Non-Small Cell Lung Cancer: A Systematic Review and Meta-Analysis of Trials(Article)

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Abstract View references (28)

Background Programmed death 1 (PD-1) programmed death-ligand 1 (PD-L1) inhibitors show significant clinical activity in non-small cell lung carcinoma (NSCLC). However, they are often associated with potentially fatal immune-mediated pneumonitis. Preliminary reports of trials suggest a difference in the rate of pneumonitis with PD-1 and PD-L1 inhibitors. We sought to determine the overall incidence of pneumonitis and differences according to type of inhibitors and prior chemotherapy use. Methods MEDLINE, Embase, and Scopus databases were searched up to November 2016. Rates of pneumonitis of any grade and grade ≥ 3 from all clinical trials investigating nivolumab, pembrolizumab, atezolizumab, durvalumab, and avelumab as single agents in NSCLC were collected. The incidence of pneumonitis across trials was calculated using DerSimonian-Laird random effects models. We compared incidences between PD-1 and PD-L1 inhibitors and between treatment naive and previously treated patients. Results Nineteen trials (12 with PD-1 inhibitors [n = 3,232] and 7 with PD-L1 inhibitors [n = 1,806]) were identified. PD-1 inhibitors were found to have statistically significant higher incidence of any grade pneumonitis compared with PD-L1 inhibitors (3.6%; 95% CI, 2.4%-4.9% vs 1.3%; 95% CI, 0.8%-1.9%, respectively; P =.001). PD-1 inhibitors were also associated with higher incidence of grade 3 or 4 pneumonitis (1.1%; 95% CI, 0.6%-1.7% vs 0.4%; 95% CI, 0%-0.8%; P =.02). Treatment naive patients had higher incidence of grade 1 through 4 pneumonitis compared with previously treated patients (4.3%; 95% CI, 2.4%-6.3% vs

2.8%; 95% CI, 1.7%- 4%; P =.03). Conclusions There was a higher incidence of pneumonitis with use of PD-1 inhibitors compared with PD-L1 inhibitors. Higher rate of pneumonitis was more common in treatment naive patients. © 2017 American College of Chest Physicians

Author keywords

- immune-related adverse events
- immunotherapy
- meta-analysis
- non-small cell lung cancer
- pneumonitis

Indexed keywords

EMTREE drug terms: antineoplastic agentatezolizumabavelumabCD274 protein, humandurvalumabmonoclon protein, humanpembrolizumabprogrammed death 1 ligand 1programmed death 1 recep

EMTREE medical terms: adverse effectsagedantagonists and inhibitorsCarcinoma, Non-Small-Cell Lungchemicall inducedfemalehumanimmunotherapyLung Neoplasmsmalemeta analysismiddle agedph clinical trial (topic)phase 3 clinical trial (topic)pneumoniarandomized controlled trial (to

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Chemicals and CAS Registry Numbers:

atezolizumab, 1380723-44-3; avelumab, 1537032-82-8; durvalumab, 1428935-60-7; nivolumab, 946414-94-4; pembrolizumab, 1374853-91-4;

Antibodies, Monoclonal; Antibodies, Monoclonal, Humanized; Antigens, CD274; Antineoplastic Agents; atezolizumab; avelumab; CD274 protein, human; durvalumab; nivolumab; PDCD1 protein, human; pembrolizumab; Programmed Cell Death 1 Receptor

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