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Supplemental Tables for:
Immune Checkpoint Inhibitor-induced myositis and myocarditis with myositis/myasthenia gravis overlap syndrome: a systematic review of cases
Ranjan Pathak et al.

Supplementary table 1. Compliance to PRISMA Harm guidelines.

Section/topic (page no)	Item	PRISMA checklist item	PRISMA harms (minimum)	Recommendations for reporting harms in systematic reviews (desirable)	Check if done
Title					
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Specifically mention “harms” or other related terms, or the harm of interest in the review.	—	☑
Abstract					
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	—	Abstracts should report any analysis of harms undertaken in the review, if harms are a primary or secondary outcome.	☑
Introduction					
Rationale	3	Describe the rationale for the review in the context of what is already known.	—	It should clearly describe in introduction or in methods section which events are considered harms and provide a clear rationale for the specific harm(s), condition(s), and patient group(s) included in the review.	☑
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	—	PICOS format should be specified, although in systematic reviews of harms the selection criteria for P, C, and O may be very broad (same intervention may have been used for heterogeneous indications in a diverse range of patients)	☑
Methods					
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., web address), and, if available, provide registration information including registration number.	—	No specific additional information is required for systematic reviews of harms.	☑
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as	—	Report how handled relevant studies (based on population and intervention) when the outcomes of interest were not reported.	☑

		criteria for eligibility, giving rationale.		Report choices for specific study designs and length of follow-up.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	—	Report if only searched for published data, or also sought data from unpublished sources, from authors, drug manufacturers and regulatory agencies. If includes unpublished data, provide the source and the process of obtaining it.	☑
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	—	If additional searches were used specifically to identify adverse events, authors should present the full search process so it can be replicated.	☑
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	—	If only included studies reporting on adverse events of interest, defined if screening was based on adverse event reporting in title/abstract or full text. If no harms reported in the text, report if any attempt was made to retrieve relevant data from authors.	☑
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	—	No specific additional information is required for systematic reviews of harms.	☑
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	—	Report the definition of the harm and seriousness used by each included study (if applicable). Report if multiple events occurred in the same individuals if this information is available. Consider if the harm may be related to factors associated with participants (e.g., age, sex, use of medications) or provider (e.g., years of practice, level of training). Specify if information was extracted and how it was used in subsequent results. Specify if extracted details regarding the specific methods used to capture harms (active/passive and timing of adverse event).	☑
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	—	The risk of bias assessment should be considered separately for outcomes of benefit and harms.	☑
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	—	No specific additional information is required for systematic reviews of harms.	☑
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	Specify how zero events were handled, if relevant.		☑
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	—	Present the extent of missing information (studies without harms outcomes), any factors that may account for their absence, and whether these reasons may be related	Not relevant

				to the results.	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were prespecified.	—	Sensitivity analyses may be affected by different definitions, grading, and attribution of adverse events, as adverse events are typically infrequent or reported using heterogeneous classifications. Report the number of participants and studies included in each subgroup.	Not relevant
Results					
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	—	If a review addresses both efficacy and harms, display a flow diagram specific for each (efficacy and harm).	☑
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Define each harm addressed, how it was ascertained (e.g., patient report, active search), and over what time period.	Add additional characteristics to: “P” (population) patient risk factors that were considered as possibly affecting the risk of the harm outcome. “I” (intervention) professional expertise/skills if relevant (for example if the intervention is a procedure). “T” (time) timing of all harms assessments and the length of follow-up.	☑
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	—	Consider the possible sources of biases that could affect the specific harm under consideration within the review. Sample selection, dropouts and measurement of adverse events should be evaluated separately from the outcomes of benefit as described in item 12, above.	☑
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	—	Report the actual numbers of adverse events in each study, separately for each intervention.	Not relevant
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Describe any assessment of possible causality.	If included data from unpublished sources, report clearly the data source and the impact of these studies to the final systematic review.	☑
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see item 15).	—	No specific additional information is required for systematic reviews of harms. See item 15 above.	Not relevant
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression (see item 16)).	—	No specific additional information is required for systematic reviews of harms.	Not applicable
Discussion					
Summary of evidence	24	Summarise the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	—	No specific additional information is required for systematic reviews of harms.	☑
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).	—	Recognise possible limitations of meta-analysis for rare adverse events (i.e., quality and quantity of data), issues noted previously related to collection and reporting.	☑

Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	—	State conclusions in coherence with the review findings. When adverse events were not identified we caution against the conclusion that the intervention is “safe,” when, in reality, its safety remains unknown.	☑
Funding					
Funding (19)	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	—	No specific additional information is required for systematic reviews of harms.	☑

Supplementary table 2. Search strategy

MEDLINE search

Immune checkpoint inhibitors	Myositis or myocarditis or myasthenia gravis
("Immunotherapy"[MeSH] OR "Antibodies, Monoclonal/therapeutic use"[MeSH] OR "Programmed Cell Death 1 Receptor"[MeSH] OR "programmed cell death"[ALL] OR "CTLA-4 Antigen"[MeSH] OR "Ipilimumab"[TIAB] OR "Tremelimumab"[TIAB] OR "Nivolumab"[TIAB] OR pembrolizumab [TIAB] OR "Cemiplimab"[TIAB] OR "Durvalumab"[TIAB] OR "Atezolizumab"[TIAB] OR "Avelumab"[TIAB] OR "B7-H1 Antigen"[ALL] OR "CTLA-4"[ALL] OR "PDCD1 protein, human"[ALL] OR "PD-1"[ALL] OR "PD-L1"[ALL] OR "Checkpoint inhibitors"[ALL] OR "Immune checkpoint inhibitors"[ALL] OR "Immune Checkpoint Inhibitors/adverse effects"[MAJR] OR “Antineoplastic Agents, Immunological/adverse effects"[MAJR] OR "Neoplasms/complications"[MAJR])	(“Myositis”[MeSH] OR “Myositis/etiology*”[MeSH] OR “Myositis/chemically induced"[MAJR] OR "Myositis/pathology"[MeSH] OR “Myocarditis”[MeSH] OR “Myocarditis/etiology*”[MeSH] OR “Myasthenia gravis”[MeSH])

Embase search

1. (heart.or muscle).hw.
2. (cardio* or cardiac* or myocard* or pericard* or endocard* or heart or muscle* or myositis or myos* or myasthenia gravis or myasthenia*).ti,ab,kw.
3. 1 or 2
4. ((immun* adj3 checkpoint adj3 (inhibitor* or modulator* or antibod* or block*)) or (("cytotoxic T lymphocyte associated" adj3 "4") or "CTLA 4" or CTLA4) or (ipilimumab or "MDX CTLA 4" or Yervoy or "MDX 010" or MDX010) or (tremelimumab or ticilimumab or "CP 675 206" or "CP 675206" or CP675206) or ("Programmed Cell Death 1" or PD1 or "PD 1") or (pembrolizumab or Keytruda or Lambrolizumab or "Merck 3475" or Merck3475 or "MK 3475" or MK3475 or "Sch 900475" or Sch900475) or (nivolumab or "BMS 936558" or BMS936558 or "MDX 1106" or MDX1106 or "ONO 4538" or ONO4538 or Opdivo) or ("AMP 514" or AMP514 or MEDI0680 or "MEDI 0680") or (cemiplimab) or (sintilimab) or ("Programmed Cell Death 2" or PD2 or "PD 2") or ("programmed death ligand 1" or "PD L1" or PDL1) or (atezolizumab or Tecentriq or MPDL3280A or "MPDL 3280A") or (durvalumab or "MEDI 4736" or MEDI4736) or (avelumab or Bavencio or MSB0010718C or "MSB 0010718C") or ("BMS 936559" or BMS936559 or MDX1105 or "MDX 1105")).ti,ab,kw,rn.
5. 3 and 4
6. limit 5 to yr="2010 - 2021"

Supplementary table 3. Completeness of reporting and risk of bias.

Author, year	Publication type	Title	Patient demographics	Current health status	Medical history	Physical examination	Patient disposition	Drug identification	Dosage	Administration	Drug-reaction interface	Concomitant therapy	Adverse events	Discussion
Ang, 2021	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Arangalage, 2017	Publication	Agree	Partially agree	Agree	Disagree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Arora, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Behling, 2017	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
Bukamur, 2019	Publication	Agree	Partially agree	Agree	Disagree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree
Charles, 2019	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Chen, 2018	Publication	Agree	Partially agree	Agree	Disagree	Agree	Agree	Agree	Partially agree	Agree	Disagree	Disagree	Agree	Agree
Chen, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Fazal, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Partially agree	Disagree	Agree	Agree
Fazel, 2019	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Disagree	Agree	Agree
Fuentes-Antras, 2020	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree
Fukasawa, 2017	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Hellman, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Imai, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Jayakumar, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree
Jeyakumar, 2020	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Johnson, 2016	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Kadota, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Konstantina, 2019	Publication	Agree	Partially agree	Agree	Partially agree	Partially agree	Agree	Agree	Partially agree	Disagree	Disagree	Partially agree	Agree	Agree
Liang, 2021	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Agree	Agree
Lie, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Lipe, 2020	Publication	Agree	Partially agree	Agree	Partially agree	Partially agree	Agree	Agree	Disagree	Disagree	Disagree	Partially agree	Agree	Agree
Liu, 2020	Publication	Agree	Partially agree	Agree	Disagree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Martinez-Calle, 2018	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Matsui, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Mehta, 2016	Publication	Agree	Partially agree	Disagree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Disagree	Partially agree	Disagree	Agree

Monge, 2018	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Nasr, 2018	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
Rota, 2019	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Saibil, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree
Sessums, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Partially agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
Shah, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Shirai, 2018	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree
So, 2019	Publication	Agree	Partially agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Swali, 2020	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Disagree	Disagree	Agree	Agree	Agree	Agree	Agree
Szuchan, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Todo, 2020	Publication	Agree	Partially agree	Agree	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree
Tomoaia, 2020	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Disagree	Agree	Agree
Valenti-Azcarate, 2019	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Veccia, 2016	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Partially agree	Agree	Agree	Agree
Witham, 2017	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree
Xing, 2017	Publication	Agree	Partially agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Yanase, 2020	Publication	Agree	Partially agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree

Supplementary Table 4. Summary of adverse events and immunosuppressive therapies used.

Author, year	Age	Sex	Indication	ICI	Immune-related adverse events	Type of steroid	IV or oral	Dose	Adjunctive therapies	Upfront or later use of adjunctive therapies
Ang, 2021	74	F	Melanoma	Anti-PD-L1 (agent unclear)	Myocarditis + myositis	Methyl prednisolone	IV	2 mg/kg/day	Mycophenolate mofetil	-
Arangalage, 2017	35	F	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	Methyl prednisolone	IV	1 g/day	Tacrolimus	Later
Arora, 2020	70	M	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	1 mg/kg/day increased to 1 g/day	Anti-thymocyte globulin, mycophenolate mofetil, cyclophosphamide	Later
Arora, 2020	79	M	Melanoma	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg/day and increased to1 g/day	Anti-thymocyte globulin, mycophenolate mofetil; cyclophosphamide	Later (cyclophosphamide given on 3rd day)
Arora, 2020	61	F	Breast cancer	Durvalumab plus tremelimumab	Myocarditis + myositis	Methyl prednisolone	IV	2 mg/kg/day	Mycophenolate mofetil	Later
Arora, 2020	69	M	Bladder cancer	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg/day increased to 1 g/day	Mycophenolate mofetil	Upfront
Arora, 2020	67	F	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	2 mg/kg/day then increased to 1 g/day	PLEX, anti-thymocyte globulin,	Later
Arora, 2020	83	M	Melanoma	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg/day	PLEX	Upfront
Arora, 2020	89	M	Lung	Pembrolizumab	Myocarditis + myositis	Methyl	IV	1 mg/kg/day	-	-

			cancer			prednisolone				
Behling, 2017	63	M	Melanoma (uveal)	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1.5 mg/kg/day	-	-
Bukamur, 2019	88	F	Lung cancer	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	High dose pulse steroid	-	-
Charles, 2019	33	M	Hodgkin's lymphoma	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1-2 mg/kg/day	Mycophenolate mofetil and IVIG	Later
Chen, 2018	43	M	Thymoma	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1000 mg/day for 3 days followed by 500 mg/day for 4 days, then 60 mg/day	IVIG	Upfront
Chen, 2020	69	F	Lung Cancer	Camrelizumab	Myocarditis + myositis	Methyl prednisolone	IV	240 mg/day	-	-
Fazal, 2020	82	M	Melanoma	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1 g/day and dual antiplatelets	IVIG at 0.4 g/kg per day for 5 days	-
Fazel, 2019	78	F	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg/day	IVIG, PLEX	Later (IVIG after 5 days and PLEX after 1 week)
Fuentes-Antras, 2020	75	M	Lung cancer	Pembrolizumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	1 g/day	IVIG and infliximab	Later (after 2 days)
Fukasawa, 2017	69	F	Lung Cancer	Nivolumab	Myocarditis + myasthenia gravis	Methyl prednisolone	IV	1,000 mg for 3 days followed by 1 mg/kg/day	-	-

Hellman, 2019	84	M	Bladder cancer	Pembrolizumab (with epacadostat)	Myocarditis + myositis	Prednisone	oral	1 mg/kg/day	IV methyl prednisone	Later (after 9 days)
Imai, 2019	70	M	Lung cancer	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1 g/day	IVIG	Later (after 3 days)
Jeyakumar, 2020	86	M	Cutaneous SCC	Cemiplimab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	1 g/day	Plasma exchange therapy for 5 days, one dose of IVIG	-
Johnson, 2016	65	F	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	Methyl prednisolone	IV	2 mg/kg/day	-	-
Johnson, 2016	63	M	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	-	-	1 g daily	Infliximab	-
Kadota, 2019	78	M	Melanoma	Pembrolizumab	Myocarditis + myositis	-	-	-	-	-
Kadota, 2019	80	M	Melanoma	Nivolumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Kadota, 2019	63	M	Melanoma	Nivolumab	Myocarditis + myositis	-	-	-	-	-
Kadota, 2019	65	F	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	-	-	-	-	-
Kadota, 2019	63	M	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	-	-	-	-	-
Konstantina, 2019	58	F	Thymoma	Pembrolizumab	Myocarditis + myasthenia gravis	Prednisolone	-	1 mg/kg/day	Mycophenolate mofetil	-
Konstantina, 2019	30	F	Thymoma	Pembrolizumab	Myocarditis + myasthenia gravis	Prednisolone	-	2 mg/kg/day	Rituximab	-
Liang, 2021	77	M	Chordoma	Sintilimab and anlotinib.	Myocarditis + myasthenia gravis	Methyl prednisolone and prednisolone	IV	160 mg every 8 hours for 5 days	-	-
Lie, 2019	79	M	Mesothelio	Nivolumab	Myocarditis + myositis	Methyl	IV	1000 mg/day	Mycophenolate mofetil	Later

			ma			prednisolone				(mycophenolate mofetil after 8 days)
Lipe, 2020	49	F	Thymoma	Pembrolizumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	67	M	Lung SCC	Durvalumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	77	M	Urinary bladder Cancer	Pembrolizumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	81	F	Renal Cell Carcinoma	Nivolumab and Ipilimumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	75	M	Chondroma	Pembrolizumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	66	F	Renal cell Cancer	Nivolumab plus Ipilimumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Lipe, 2020	74	F	Melanoma	Nivolumab plus Ipilimumab	Myocarditis + myositis + myasthenia gravis	-	-	-	-	-
Liu, 2020	71	M	Melanoma	Nivolumab	Myocarditis + myositis	Methyl prednisolone	IV	1 g/day	IVIG and methotrexate	Later (after 9 days)
Martinez-Calle, 2018	67	F	Multiple myeloma	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1.5 mg/kg/day	Infliximab	Later (after 2 days)
Matsui, 2020	69	M	Bladder cancer	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	15 mg/day/body	-	-
Mehta, 2016	79	M	Lung Cancer	Nivolumab	Myocarditis + myositis	-	-	-	-	-
Monge, 2018	79	M	Prostate	Nivolumab	Myocarditis + myositis	Methyl	IV	1 mg/kg/day	-	-

			cancer			prednisolone				
Nasr, 2018	79	M	Gastric adenocarcinoma	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg/day	IVIG, methotrexate	Later (IVIG 2 mg/kg IV for 4 days and methotrexate 25 mg/m2 subcutaneously once weekly after 5 days when cardiac symptoms arose)
Rota, 2019	71	M	Renal cancer	Nivolumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	1 g/kg/day	IVIG	Upfront
Saibil, 2019	67	M	Melanoma	Nivolumab plus ipilimumab	Myocarditis + myositis	Methyl prednisolone		200 mg on day 1, then 1000 mg daily for 3 days	Infliximab, IVIG	Later (1 dose of infliximab (5 mg/kg) and 2 doses of intravenous IVIG 3 days later)
Sessums, 2020	74	M	Bladder cancer	Atezolizumab	Myocarditis + myositis	Methyl prednisolone	IV	1g daily	-	-
Shah, 2019	73	M	Bladder cancer	Nivolumab plus ipilimumab	Myocarditis + myositis	Methyl prednisolone	IV	1 mg/kg twice daily	Infliximab infusion followed by 12 rounds of PLEX and subsequent IVIG infusions	Later
Shirai, 2018	83	M	Melanoma	Pembrolizumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone and	IV	3 days of steroid pulse therapy (methyl	Four cycles of PLEX therapy were carried out simultaneously	-

						prednisolone		prednisolone) 1000 mg/d followed by prednisolone at a dose of 1 mg/kg/day, which were gradually tapered to 30 mg/day	with steroid pulse therapy	
So, 2019	55	F	Melanoma	Nivolumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	-	IVIG, PLEX	-
Swali, 2020	77	M	Melanoma	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone		1 g/day	IVIG	-
Szuchan, 2019	70	F	Thymic Cancer	Pembrolizumab	Myocarditis + myasthenia gravis	Methyl prednisolone	IV	1 g/day	-	-
Todo, 2020	63	M	Bladder cancer	Pembrolizumab	Myocarditis + myositis	Methyl prednisolone	-	1 mg/kg/day	-	-
Tomoaia, 2020	63	F	Lung cancer	Nivolumab	Myocarditis + myositis	Methyl prednisolone	-	-	-	-
Valenti-Azcarate, 2019	66	M	Lung cancer	Nivolumab plus Ipilimumab	Myocarditis + myositis	Methyl prednisolone	IV	2 mg/kg/day	-	-
Veccia, 2016	65	M	Lung	Nivolumab	Myocarditis + myositis	Dexamethason	IV	8 mg/day twice	IVIG 0.4 mg/kg/day	-

			cancer				e		daily	administered for 5 days. Oral pyridostigmine (60 mg daily) followed for one week. Oral prednisone 1mg/kg daily was maintained.	
Witham, 2017	74	M	Melanoma	Nivolumab plus Ipilimumab	Myocarditis + myositis	-	oral	-	IVIG	-	
Xing, 2017	66	M	Lung cancer	Sintilimab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	2 mg/kg/day	IVIG 400 mg/kg/day for 5 days Pyridostigmine bromide (120 mg, twice a day) Antibiotic therapy, nutrition support PLEX	Later (PLEX was given 5 weeks after steroids)	
Yanase, 2020	59	M	Renal Cell cancer	Nivolumab plus Ipilimumab	Myocarditis + myositis + myasthenia gravis	Methyl prednisolone	IV	1000 mg/day	IVIG	-	

F=female; IV=intravenous; IVIG=Intravenous immunoglobulins; M=male; PLEX=plasmapheresis