COMPARATIVE PHARMACOVIGILANCE OF BCMA AND GPRC5D-DIRECTED BISPECIFIC ANTIBODIES IN RELAPSED MULTIPLE MYELOMA: A FAERS OBSERVATIONAL STUDY

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INTRODUCTION

Bispecific antibodies redirect T cells toward malignant plasma cells and have expanded treatment options for relapsed or refractory multiple myeloma (RRMM). The BCMA-directed bispecific antibodies teclistamab (FDA approval October 2022) and elranatamab (FDA approval August 2023) were followed by the GPRC5D-directed bispecific talquetamab in August 2023. Post-marketing toxicity signals remain poorly defined.

AIM

What target-specific toxicity phenotypes emerge from pharmacovigilance analysis of BCMA- versus GPRC5D-directed bispecific antibodies in relapsed or refractory multiple myeloma?

METHOD

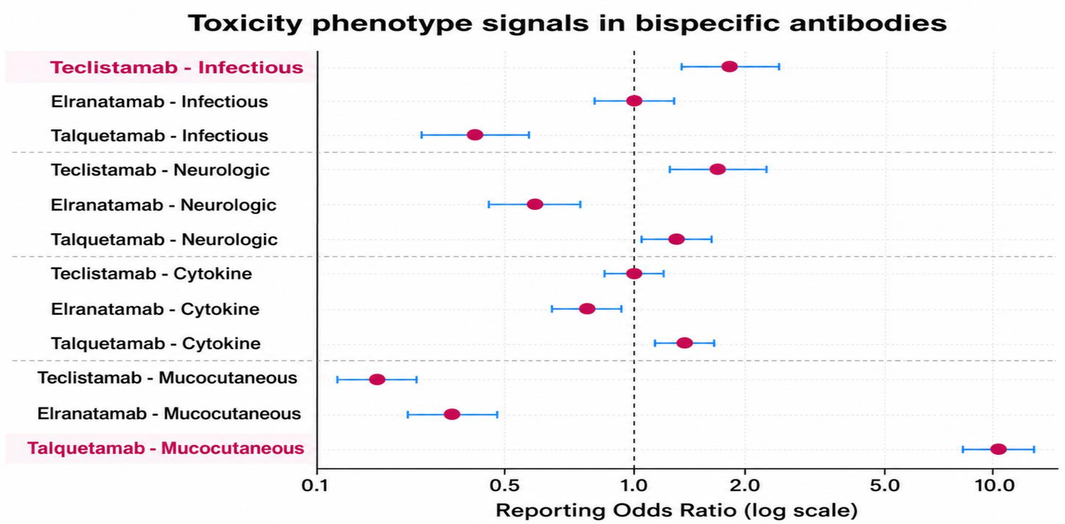
We conducted a retrospective observational pharmacovigilance study analyzing FAERS reports from 2022–2025. Reports involving teclistamab, elranatamab, or talquetamab were included if the drug was listed as the primary suspect and the indication was multiple myeloma. Adverse events were categorized into predefined toxicity phenotypes including cytokine-mediated, infectious, hematologic, neurologic, and mucocutaneous events. Disproportionality analysis using reporting odds ratios (ROR) with 95% confidence intervals evaluated safety signals associated with each bispecific antibody and target class.

RESULTS

Table 1. Baseline Characteristics of Included FAERS Reports

Characteristic	Teclistamab	Elranatamab	Talquetamab	Total
Total reports, n (%)	2,225 (51.6%)	1,137 (26.4%)	951 (22.0%)	4,313 (100.0%)
Sex available, n (%)	1,682 (75.7%)	1,015 (89.3%)	702 (73.8%)	3,399 (78.8%)
Male, n (%)	921 (54.8%)	533 (52.5%)	410 (58.4%)	1,864 (54.8%)
Female, n (%)	761 (45.2%)	482 (47.5%)	292 (41.6%)	1,535 (45.2%)
Missing sex, n (%)	543 (24.4%)	122 (10.7%)	249 (26.2%)	914 (21.2%)

Percentages for sex categories are calculated among reports with sex information available.



RESULTS SUMMARY

- A total of **4,313** reports met inclusion criteria: **2,225 teclistamab, 1,137 elranatamab**, and **951 talquetamab** reports.
- Teclistamab showed increased reporting of **infectious toxicity (ROR 1.79, 95% CI 1.51–2.13)** and **neurologic toxicity (ROR 1.53, 95% CI 1.26–1.86)**.
- Talquetamab demonstrated increased **cytokine-mediated toxicity (ROR 1.34, 95% CI 1.15–1.56)** in addition to its mucocutaneous signal.
- In target-level comparison, **BCMA-directed bispecifics** demonstrated higher reporting of **infectious toxicity** compared with talquetamab **(ROR 2.84, 95% CI 2.15–3.74)**.
- Talquetamab showed a prominent **mucocutaneous signal (ROR 10.11, 95% CI 7.98–12.82)**.

FAERS data are reporting signals, not incidence or causality

CONCLUSIONS

BCMA-directed therapies were predominantly associated with infectious toxicity signals, whereas talquetamab demonstrated a prominent mucocutaneous toxicity profile consistent with GPRC5D-associated epithelial expression. FAERS analyses remain limited by reporting bias and lack of exposure denominators. These findings provide real-world safety insights that may help clinicians anticipate and manage target-specific toxicities as bispecific therapies expand in multiple myeloma treatment.

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