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Anti-multiple myeloma drug-associated taste dysfunction: An analysis of the FAERS database

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Multiple myeloma is an incurable disease in many patients; therefore, maintaining good quality of life (QOL) for the duration of the long-term treatment is important. Taste dysfunction is reported to occur in 30 to 70% of patients receiving cancer chemotherapy [1]. This adverse event affects the appetite of patients; consequently, QOL of patients decreases. However, it remains unclear about the association between taste dysfunction and anti-multiple myeloma drugs. In this study, reports submitted to the US Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS) were reviewed to assess taste dysfunction induced by the administration of anti-multiple myeloma drugs.

Input data for this study were taken from public releases of the FAERS database, covering the period from the fourth quarter of 1997 through the first quarter of 2014. Following preprocessing of FAERS data by elimination of duplicate records as well as adjustments to standardize drug names, reports involving bendamustine, bortezomib, cyclophosphamide, dexamethasone, doxorubicin, lenalidomide, melphalan, prednisolone, thalidomide, and vincristine were analyzed. Some of the adverse events that have been defined as "taste and smell disorders" in the Standardised MedDRA Queries (SMQs), version 18.0, i.e. ageusia, dysgeusia, gustometry abnormal, hallucination, hypergeusia, and hypogeusia, were focused on as representative words for taste dysfunction in this study. Signals in the data that signified a drug-associated adverse event were detected via quantitative data mining algorithms. The algorithm applied to this study was the reporting odds ratio (ROR).

The results were shown in Fig. 1. A signal for ageusia was detected with lenalidomide, and its signal score was 1.84. As for hypogeusia, signals were detected with bortezomib, dexamethasone, and lenalidomide, and signal scores suggested the

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anti-multiple myeloma drugs	ageusia		dysgeusia		hypogeusia	
	N	ROR (ROR025)	N	ROR (ROR025)	N	ROR (ROR025)
BENDAMUSTINE	2	0.52 (0.13)	16	0.89 (0.55)	1	3.37 (0.48)
BORTEZOMIB	16	0.78 (0.48)	45	0.47 (0.35)	5	3.20 (1.33)*
CYCLOPHOSPHAMIDE	21	0.37 (0.24)	85	0.32 (0.26)	6	1.38 (0.62)
DEXAMETHASONE	64	0.68 (0.53)	298	0.68 (0.61)	16	2.23 (1.36)*
DOXORUBICIN	11	0.28 (0.15)	50	0.27 (0.21)	1	0.33 (0.05)
LENALIDOMIDE	73	1.84 (1.46)*	187	1.01 (0.88)	9	2.97 (1.54)*
MELPHALAN	6	0.41 (0.18)	27	0.39 (0.27)	1	0.88 (0.12)
PREDNISOLONE	35	0.52 (0.37)	125	0.40 (0.33)	6	1.16 (0.52)
THALIDOMIDE	21	0.76 (0.50)	52	0.41 (0.31)	3	1.42 (0.46)
VINCRISTINE	4	0.13 (0.05)	28	0.20 (0.14)	1	0.43 (0.06)

*Detected signals

Fig. 1 – Signal scores for adverse events by anti-multiple myeloma drugs.

same level in terms of association. Gender data were available for 4,864,737 of 5,274,242 (92.2%) reports, 1,883,921 reports for males and 2,980,816 reports for females. The aforementioned signals were detected in males, but not in females. On the other hand, there were no reports or signals for dysgeusia, gustometry abnormal, hallucination, or hypergeusia. In this study, the results suggest that lenalidomide has greater relevance to taste dysfunction than the other drugs we analyzed, and taste dysfunction induced by the administration of anti-multiple myeloma drugs tends to more easily occur among males.

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