Rituximab and Pyoderma Gangrenosum. An investigation of risk using a systems biology approach in the FAERS Database.

University of South Australia

Background:

A previous study using the FDA Adverse Event Reporting System (FAERS) found an increased risk of Pyoderma Grangrenosum (PG) associated with rituximab, however the comparisons medicines used were unclear.

Rituximab has unique structural and pharmacological p roperties and is used to treat a range of immune-related diseases which are also associated with PG, all of which may influence the causal pathway.

Objective:

To test a systems biology approach for selection of comparator medicines to clarify the risk of PG associated with rituximab use.

- all other medicines,
- all other monoclonal antibodies (mAbs) (structural),
- all other CD20 antagonists (pharmacological)
- Indication (background risks).

Methods:

- Fuzzy matching was used to identify all adverse event reports in the FDA Adverse Event Reporting System (FAERS, 2013-2020) where rituximab was the primary suspect.
- Bayesian Confidence Propagation Neural Network (BCPNN) Information Component (IC), with a 95% confidence interval, was used to test for adverse drug reaction reporting disproportionality.
  A potential signal was identified when the exponentiated IC estimate (an estimate on the ratio scale) was >2 and the 95% confidence interval lower bound was > 1.

Hillen JB, Standford T and Pratt N

Quality Use of Medicines and Pharmacy Research Center

University of South Australia *NHMRC Project Grant GNT1157506*

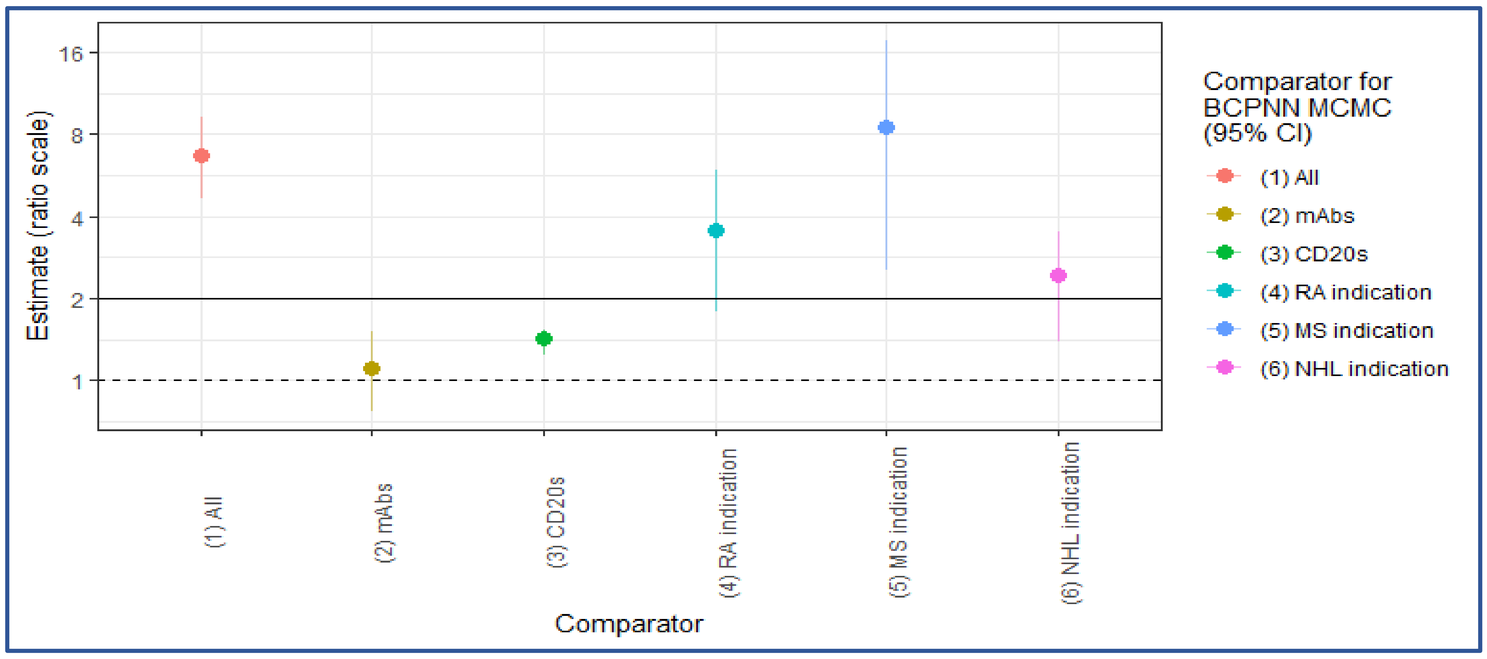
11056
PG Reports in FAERS

63% Female

32 cases Rituximab primary suspect

48 Median Age

Signal detection estimates (BCPNN MCMC) of rituximab v other comparators for pyoderma gangrenosum.



Conclusion:

Rituximab was disproportionately associated with PG compared to all other medicines but **NOT** when compared to other medicines with the same structural or pharmacological action.

Our results suggest that causal pathways may include structural and or pharmacological pathways and risk is modified by the underlying immune disease.

Impact: Post-market surveillance of biologic medicines in FAERS should consider a systems biology approach, particularly when the outcome of interest is associated with the underlying immune condition being treated by the medicine of interest

1st mini annual research symposium and policy forum

Medicines Intelligence CRE
real world evidence • smarter medicine use