Validating Medication Triggers for Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis

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Introduction

Although rare, two of the most severe drug-induced diseases, Stevens Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN), are associated with high rates of mortality ranging from 1%-5% for SJS and 25%-35% for TEN. Prompt identification and withdrawal of the causative agent is known to improve survival rates, but the mechanism of action by which medications cause these diseases is not fully understood, making it difficult to target classes of medications or their chemical functional groups (e.g. sulfonamides) and for clinicians to know when their patient may be at risk to develop the disease. Medications that have an association with these diseases have typically been identified through retrospective chart review and are limited in scope due to the infrequent occurrence of the diseases. We aim to assess the correlation between medications described in the literature as having an association with the disease by leveraging a large network of research data.

Methods

Using a commercially available claims dataset totaling over two-hundred million patients, we queried for patients who had taken a known causative agent of SJS or TEN within sixty days before the first instance of an ICD10-CM diagnosis code (L51.1, L51.2, L51.3) for SJS, TEN or overlapping SJS/TEN (n = 26,937 patients). With each individual medication from the target list in focus, we queried for patients who had no record of taking the medication after diagnosis, hypothesizing that patients who had no instance of taking the medication post-diagnosis implied a correlation between the cessation of the medication and that medication being the offending agent further reducing the cohort to 3,760 patients.

Results

We tabulated counts for each instance and determined a weighted percentage of overall diagnosis attributed to each medication (Figure 1). Our results aligned strongly with what was reported in the literature—with the exception of “shot-gun” antibiotics. Vancomycin and Pip-Tazo highlight a shortcoming of our method: patients who are acutely ill may have the medication discontinued not due to disease trigger, but because they aren’t used in chronic treatment. Low allopurinol and phenytoin results could be due to therapeutic choice to maintain patients on more contemporary agents.

Conclusion

Using our method for analyzing Real World Data for triggers of SJS and TEN, we have demonstrated a strong alignment to literature; therefore, we feel that this approach can be extended to look for other causative agents.

References