Assessment of Remdesivir-Related Adverse Drug Event Frequency and Type in a Large Hospital System

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Learning Objective

- Describe a strategy to identify adverse drug reactions with remdesivir leading to findings of bradycardia as a more common adverse drug event (ADE) compared to data reported in the FDA Adverse Events Reporting System (FAERS) Public Dashboard.

Background

- In response to the ongoing COVID-19 pandemic, the FDA issued an emergency use authorization (EUA) for remdesivir (Veklury) in certain hospitalized COVID-19-positive patients in May of 2020. FDA approval of remdesivir followed in October of 2020.[1]
- Remdesivir is an antiviral agent that inhibits the RdRp enzyme necessary in replication and transcription of SARS-CoV-2.[2]
- The Veklury package insert includes warnings for increased risk of transaminase elevations and hypersensitivity including infusion-related and anaphylactic reactions.[2]

Methods

- We conducted a retrospective analysis of voluntarily-reported adverse drug reactions associated with remdesivir use in hospitalized patients positive for SARS-CoV-2 at eight hospitals within the BJC HealthCare system from July 18, 2020, to November 2, 2020.
- Data from the FAERS Public Dashboard were utilized to compare local ADE reports to national ADE reports.
- Common liver injuries reported in the FAERS Public Dashboard were analyzed as one group, including ALT increase, AST increase, and liver function test increase.
- Common kidney injuries reported in the FAERS Public Dashboard were analyzed as one group, including acute kidney injury and blood creatinine increase.

Results

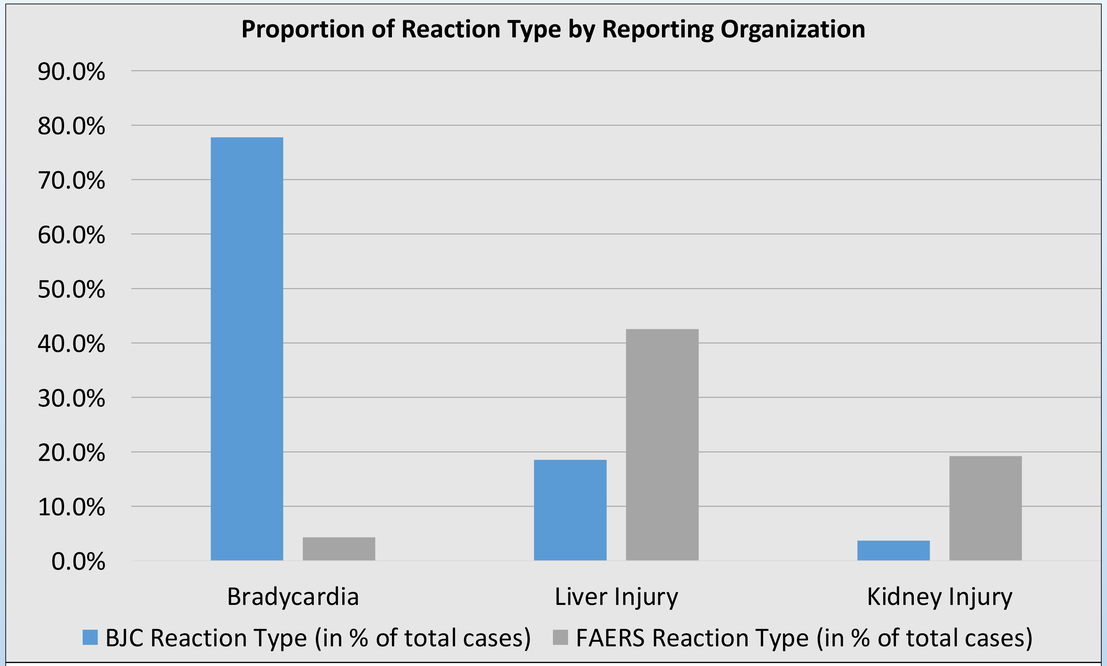

Figure. Comparison of the proportion of remdesivir Adverse Drug Reactions reported through BJC HealthCare and through the FAERS Public Dashboard as of November 5, 2020

Event Category	ADEs reported by BJC HealthCare (% of total)	ADEs reported by FAERS Public Dashboard (% of total)
Bradycardia	21 (77.78)	140 (4.29)
Liver Injury	5 (18.52)	1387 (42.55)
Kidney Injury	1 (3.70)	627 (19.23)

Table 1. Number of ADE case reports by category of reaction from BJC HealthCare and from the FAERS Public Dashboard

- Liver injury, kidney injury, and bradycardia made up 66.07% of the 3260 ADEs reported in the FAERS Public Dashboard as of September 30, 2020.[3]
- 27 ADE case reports came from eight hospitals within the BJC HealthCare system before November 2, 2020.
- When compared to FAERS data, BJC had a much higher proportion of reported bradycardia (4.29% vs 77.78%, respectively).

Discussion and Conclusion

- Bradycardia is the most common ADE reported at BJC HealthCare for remdesivir (77.8%) compared to the 7th most common reaction reported (4.3%) to the FAERS Public Dashboard.[3]
- Reporting to the FAERS Public Dashboard is voluntary for healthcare professionals and consumers.
- Bradycardia is likely more common than reported.
- We did not evaluate whether other concurrent drugs could have contributed to the ADE.
- A comprehensive, electronic chart review of all patients on remdesivir will provide a clearer picture of the incidence of bradycardia compared to voluntary reporting.

Practice Recommendations

- Slowing the infusion time of remdesivir to a maximum of 120 minutes may decrease incidence of bradycardia in SARS-CoV-2-positive patients receiving remdesivir.[2]
- Monitoring increases of SCr, AST, and ALT in SARS-CoV-2 (+) patients on remdesivir may help in early identification of true remdesivir ADEs.

References

1. Emergency Use Authorization. U.S. Food & Drug Administration. https://www.fda.gov/emergency-use-authorization#coviddrugs. Published 2020. Accessed January 15, 2020.
2. Veklury [package insert]. Foster City, CA: Gilead Sciences, Inc.; October 2020.
3. Remdesivir. FDA Adverse Events Reporting System (FAERS) Public Dashboard. https://fis.fda.gov/sense/app/d10be6bb-494e-4cd2-82e4-0135608ddc13/sheet/59a37af8-d2bb-4dee-90bf-6620b1d5542f/state/analysis. Accessed November 5, 2020.

Author Disclosures

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