EPH144

Incidence of Tick-Borne Encephalitis in Germany – Comparison of Claims Data with Public Surveillance Data

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INTRODUCTION

- Tick-borne encephalitis (TBE) is a viral infection which is notifiable in Germany since 2001 [1].
- Since then, the Robert-Koch Institute (RKI) has documented between 195-718 TBE cases per year, based on a case definition requiring laboratory confirmation [2].
- However, several studies suggest that these figures may underestimate the true burden of disease [3].
- This study investigates the incidence of TBE in Germany using statutory health insurance (SHI) claims data and compares it with RKI reported figures.

METHODS

- We conducted a retrospective cohort analysis using the German Analysis Database for Evaluation and Healthcare Research (DADB) [4]. The DADB includes data of up to 3 million SHI patients annually between 2013-2022 and is representative of Germany in terms of regional distribution, age and sex.
- Incident TBE cases were identified by ICD-10 codes A84.1 and A84.9, recorded as either confirmed outpatient diagnoses or primary/secondary inpatient diagnoses, with no TBE diagnoses in the preceding year.
- To address potential miscoding, cases with concurrent TBE vaccination at diagnosis were excluded in a refined cohort.
- Analyses were stratified by age, sex, region and diagnosis setting. Laboratory testing, concurrent diagnoses, hospitalization, specialist care and mortality were also evaluated. Results were extrapolated to the SHI population, and adjusted extrapolated rates are reported.

RESULTS

- In total, 2,572 incident TBE cases were identified between 2014-2022 in the DADB. Extrapolated to the German SHI population, this translates to 71,157 (CI: 66,971-73,434) cases. Only 4.4% of the cases displayed a concurrent diagnosis, defined as Lyme disease, encephalitis, meningitis or spotted fever, in the 60 days before or after the index diagnosis.
- However, 83.1% of cases were simultaneously coded with TBE vaccination, indicating probable miscoding. After excluding these, the refined cohort comprised 411 cases, extrapolating to 12,041 cases (95% CI: 10,659–13,317). This corresponds to approximately three times the 4,054 cases reported by the RKI for the same period [5].
- In the refined cohort, only 40.7% received any indicative laboratory test, and a specific TBE test was coded in only 15.4% of the cases. Test rate of patients was significantly higher in risk areas vs. non-risk areas (51.1% vs. 21.8%, p<0.01).
- Most patients (79.6%) were initially diagnosed in the outpatient setting, of them 10.3% were later hospitalized.
- A third of the patients (33.4%) in the DADB were identified in districts not designated as risk areas by 2022, compared to only 2.8% in the RKI data [6].

RESULTS (continued)

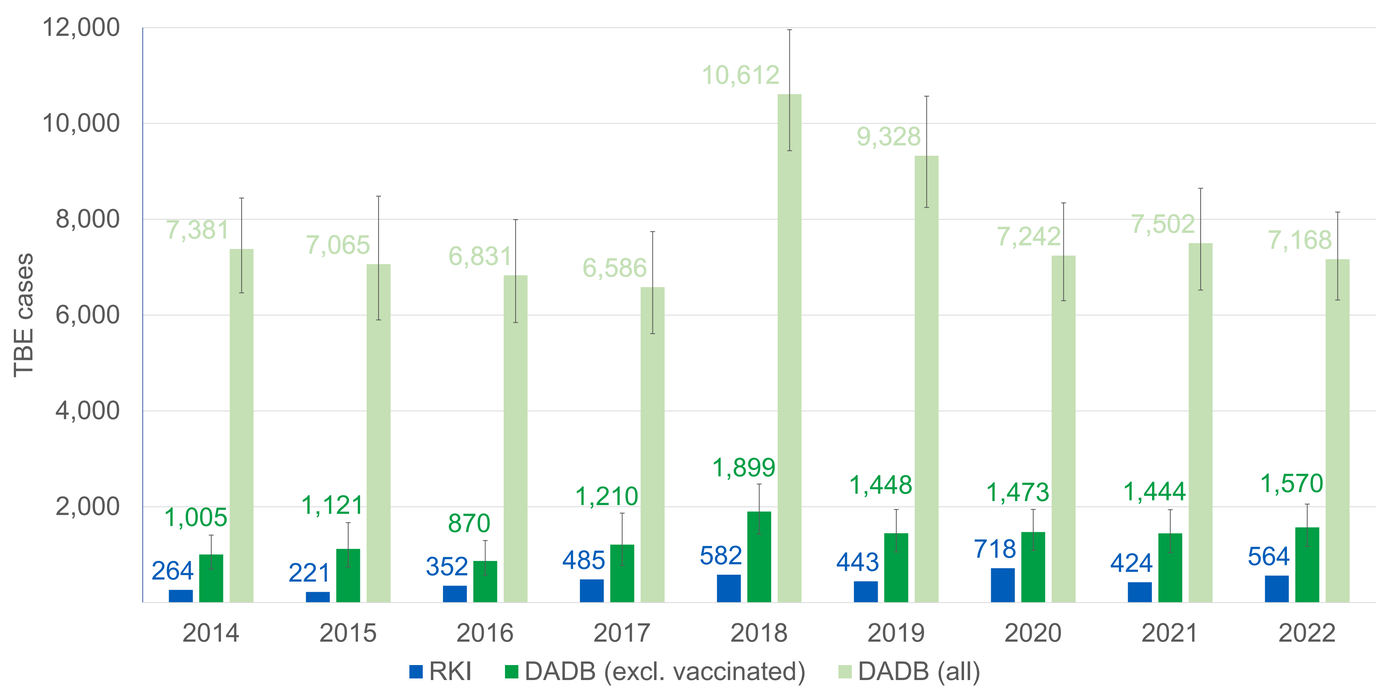

Fig. 1 Annual incident TBE cases, as reported by the RKI, identified in the DADB excluding patients with concurring vaccination, and identified in the DADB overall. DADB numbers are extrapolated to the entire SHI population (with confidence interval).

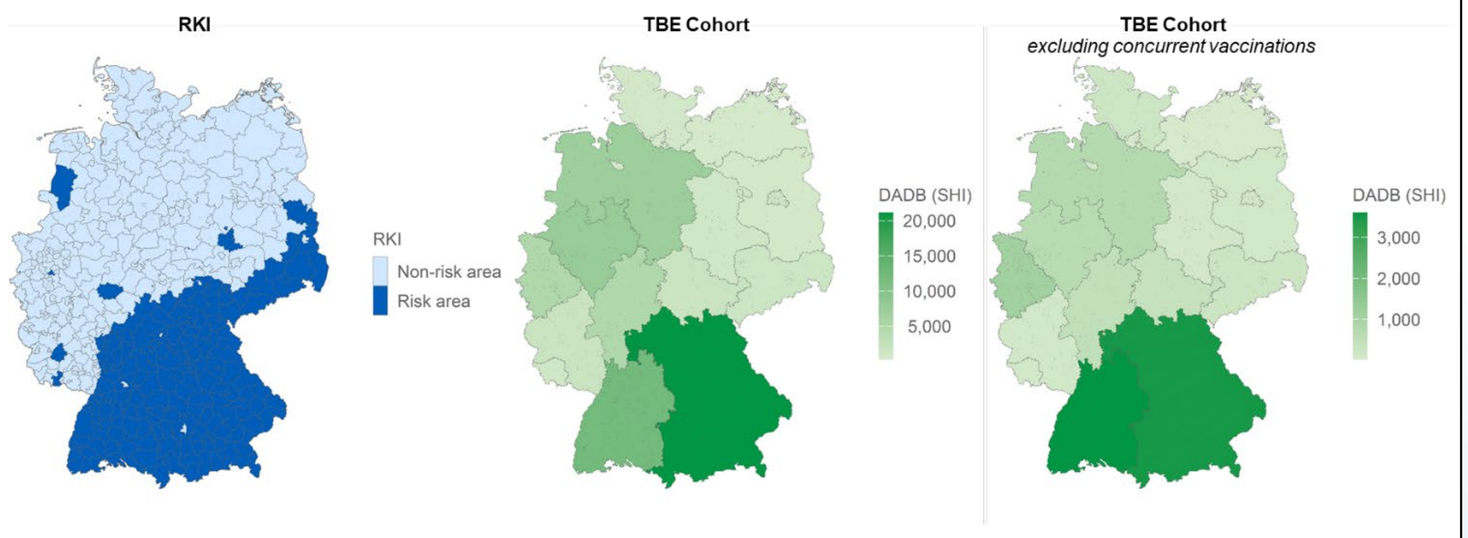

Fig. 2 Regional distribution of incident TBE cases between 2014-2022 identified in the DADB (overall and excluding vaccinated patients) compared to the risk areas designated by the RKI in 2022.

CONCLUSIONS

Health claims data indicate a substantially higher incidence of TBE compared to RKI reports, even under restrictive assumptions. The low test rates identified may partially account for this discrepancy. Additionally, widespread simultaneous coding of TBE vaccination and TBE diagnosis suggests common miscoding or, theoretically possible but unlikely, post-exposure vaccination. These findings indicate potential surveillance gaps, e.g. underdiagnosis and underreporting, and imply that many outpatient and mild cases remain undetected by official reporting systems. Further investigation is needed to better understand clinical, diagnostic and documentation practices.

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Disclosures

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Conflicts of Interest: All authors were completely independent in the conception of the study, the conduct of the analyses, the interpretation of the results and the drafting of the abstract/poster. GL, JSR, CvE and CM are employees of Pfizer Pharma GmbH and may hold stocks or stock options. IK is an employee of Gesundheitsforen Leipzig GmbH, which is an independent service provider and paid consultant for Pfizer Pharma GmbH for the conception of the study, the conduct of the analyses and the interpretation of the results. GD received a consulting fee from Pfizer Inc. for consulting on the design of the study and the interpretation of the results.

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