Spatial Analysis of Hospital Incidence and in Hospital Mortality of Abdominal Aortic Aneurysms in Germany: Secondary Data Analysis of Nationwide Hospital Episode (DRG) Data

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Abstract

Background
This study aimed to analyze the spatial distribution and regional variation of the hospital incidence and in hospital mortality of abdominal aortic aneurysms (AAA) in Germany.

Methods
German DRG statistics (2011–2014) were analysed. Patients with ruptured AAA (rAAA, I71.3, treated or not) and patients with non-ruptured AAA (nrAAA, I71.4, treated by open or endovascular aneurysm repair) were included. Age-, sex-, and risk-standardisation was done using standard statistical procedures. Regional variation was quantified using systematic component of variation. To analyse spatial auto-correlation and spatial pattern, global Moran's I and Getis-Ord Gi* were calculated.

Results
A total of 50,702 cases were included. Raw hospital incidence of AAA was 15.7 per 100,000 inhabitants (nrAAA 13.1; all rAAA 2.7; treated rAAA 1.6). The standardised hospital incidence of AAA ranged from 6.3 to 30.3 per 100,000. Systematic component of variation proportion was 96% in nrAAA and 55% in treated rAAA. Incidence rates of all AAA were significantly clustered with above average values in the northwestern parts of Germany and below average values in the south and eastern regions. Standardised mortality of nrAAA ranged from 1.7% to 4.3%, with that of treated rAAA ranging from 28% to 52%. Regional variation and spatial distribution of standardised mortality was not different from random.

Conclusion
There was significant regional variation and clustering of the hospital incidence of AAA in Germany, with higher rates in the northwest and lower rates in the southeast. There was no significant variation in standardised (age / sex / risk) mortality between counties.

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Keywords

Abdominal aortic aneurysm, hospital incidence, in-hospital mortality, spatial analysis, regional variation

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