



Invited Commentary

Acute Abdominal Aortic Aneurysm: Significant Regional Differences across Norway

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In this issue of the *Journal*, Brattheim et al.¹ assessed the regional disparities in incidence, handling and outcomes of patients suffering from ruptured or symptomatic abdominal aortic aneurysm (AAA) in Norway. Analysing their National Patient Registry, they found that 1291 patients developed ruptured or symptomatic AAA during a recent continuous 32-month period. Among those, 711 patients (55%) presented with ruptured AAA (rAAA), or an overall incidence of 16.6 rAAA per 100,000 person-years for patients aged >50 years. Interestingly, this incidence varied significantly across Norwegian regions, from 7.7 to 26.8. These regional effects in the incidence of rAAA could neither be attributed to difference in prevalence of atherosclerotic disease nor to variations in the number of patients diagnosed with AAA, for example in screening programs, and operated before rupture. This observation certainly deserves further investigation.

Another interesting finding of this study was that the odds of dying varied with a factor 2.3 between the extreme regions (South-East as compared to North). These regional differences persisted after inclusion of demographic variables of gender and age. As raised by the authors, it is possible that longer transportation distances in northern Norway induces a selection and that the fittest patients are transported and operated upon arrival at the referring hospital. This also warrants further study.

A third relevant observation was that 86% of rAAA patients transferred from hospitals without vascular surgical service were operable, in line with previous observations that a large proportion of critically ill patients can be stabilised at a primary hospital, subsequently transported to a hospital with vascular surgical facilities, and considered eligible for surgery upon arrival. Haveman et al.² concluded that, in an environment and an ambulance system

(in the Netherlands) that has short delays of transportation, a unified strategy of treatment of acute AAA provided hospital survivals comparable to the best reported in the literature, despite a policy of offering surgery to most patients.

In this regard, as pointed out by Brattheim et al.,¹ telemedicine plays a central role. Indeed, shared assess to adequate imaging is essential for decision making, procedure planning, and immediate availability of human resources and material in the operating theatre once these critically ill patients arrive.

Finally, in this study, the majority of patients admitted for symptomatic, non-ruptured, AAA had actually no AAA-related symptoms (according to the data obtained from the analysed database) and were discharged without undergoing surgical AAA repair. Longitudinal research is needed to determine the trajectories and outcomes of these patients.

Besides raising numerous questions that should lead to further investigation and possibly to comparison with other European countries and regions, this large nationwide study, reporting an overall 54% mortality rate for ruptured AAA, supports the need for thorough national AAA screening programs.

References

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- 2 Haveman JW, Karliczek A, Verhoeven EL, Tielliu IF, de VR, Zwaveling JH, et al. Results of streamlined regional ambulance transport and subsequent treatment of acute abdominal aortic aneurysms. *Emerg Med J* 2006;**23**:807–10.

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