Missing data on 3-month modified Rankin Scale may influence results of functional outcome after intravenous thrombolysis in observational studies

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Dear Editor,

The Safe Implementation of Treatments in Stroke (SITS)-Thrombolysis is an internet-based registry, which currently includes more than one hundred thousand thrombolysed patients from about 1400 centers all over the world [1]. As of May 31 2016, 57.8 % of the registered patients resulted functionally independent [modified Rankin Scale (mRS) ≤ 2] at 3 months after intravenous thrombolysis (IVT), but data on 3-month mRS were missing in a significant proportion (24 %) of the registered patients [2]. A recent analysis on 29,618 patients registered in the SITS-Thrombolysis reported functional independence at 3 months in 14,148/23,987 (59 %) patients, and missing data on 3-month mRS in 5631 (19 %) patients [3]. On the other hand, a systematic review of randomized controlled trials (RCTs) on IVT reported a lower proportion of thrombolysed patients (1611/3483, 46.3 %) who were functionally independent at the end of follow-up [4]. We speculate that missing data in observational studies are responsible of overestimation of the proportion of patients with 3-month mRS ≤ 2 after IVT. We analyzed data prospectively collected from 207 consecutive stroke patients treated with IVT at the Stroke Unit, Azienda Ospedaliera Universitaria Integrata Verona, from January 1 to December 31, 2015. Since a significant proportion of patients (29 %) did not attend the 3-month scheduled follow-up visit or telephonic interview, we went to the missing patients' residence to assess 3-month mRS and we were able to get data from 54/60 (90 %) missing patients. Of these patients only 20/54

(37 %) had mRS ≤ 2 , compared with 86/147 (58.5 %) functionally independent patients who attended the 3-month regular follow-up ($p = 0.01$). Overall proportion of patients with 3-month mRS ≤ 2 was 52.7 %, which is slightly higher compared with RCTs [4], but lower compared with previously reported observational studies [2, 3]. In conclusion, our findings suggest that missing data on 3-month mRS may influence results of functional outcome after IVT in observational studies.

Compliance with ethical standards

Conflicts of interest The authors declare no conflicts of interest.

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