Emergency hospital admissions with hypoglycaemia: analysis of hospital episode statistics in England and a UK tertiary hospital electronic health record

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Abstract:

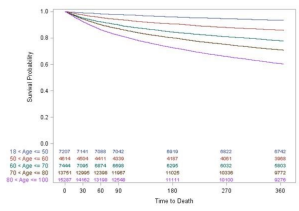
Background and aims: Records of patients requiring emergency admission to hospital with hypoglycaemia were reviewed to identify their characteristics and co-morbidities, and the association with mortality.

Materials and methods: Hospital Episode Statistics (HES) in England were assessed to provide information on all admissions for acute hypoglycaemia during the period of interest, including comorbidities, length of stay and repeat admission. Mortality (up to 1 year), including principal cause, was accessed from linked Office for National statistics (ONS) mortality data. Electronic health Records (EHRs) were also accessed from a major UK Tertiary Hospital to inform on pharmaceutical treatments used.

Results: From April 2012-2017, 48303 emergency admissions (25490, 52.8% male) to English NHS Hospitals were for acute hypoglycaemia, with 29038 (60.1%) being aged >70 years and 23168 (48%) having had at least one previous emergency admission for any cause in the preceding year. Co-existing medical disorders included cardiovascular disease 20859 (43.2%), congestive heart failure 4932 (10.2%), chronic kidney disease 11339 (23.5%), mood disorders 3451 (7.1%), organic brain disorders 2935 (6.1%), alcohol-related disorders 1885 (3.9%) and neoplasia 5420 (11.2%). Physical injury was associated with the hypoglycaemia in 8.4%. Half had one or more emergency readmission for any cause within the following year. During that period the overall mortality rate was high (Figure) and was strongly related to age at time of the index admission with hypoglycaemia ($p<0.001$). ONS underlying cause of death: 3064 (23.8%) cardiovascular, 2089 (16.2%) neoplasia, 1698 (13.2%) respiratory infections, and 632 (4.9%) mental disorders (predominantly organic brain disease). Accessing the EHR in the tertiary NHS Hospital (which contains prescription information not captured in HES) indicated that 401 (68.2%) patients were treated with insulin, with 67 (11.3%) on basal insulin alone, 18.2% on basal bolus regimens and 33.3% on fixed mixture insulins. Sulfonylureas were taken by 11%. None were receiving GLP-1 inhibitors.

Conclusion: The prognosis of patients who required hospital emergency admission for severe hypoglycaemia worsened with increasing age. Many were taking insulin and had co-existing medical comorbidities, which may have exacerbated hypoglycaemia severity and morbidity and contributed to the substantial mortality that occurred within the following year. When hypoglycaemia in older people requires hospital admission, clinicians should be aware of the vulnerability of these patients to subsequent life-threatening illness.

Figure: Kaplan Meier time to death (days) after emergency admission for hypoglycaemia by age category



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