Introduction and Purpose

Hyperglycaemia is commonly observed in the acute phase of stroke. We aimed to identify empirical research on the dynamic of glycaemia over successive days after admission to hospital, to describe and inform practice and future research.

Methods

We searched MEDLINE, PubMed and Embase electronic databases for descriptive cohort studies published between January 1996 and June 2011. Studies were included if glycaemic status was monitored over at least two successive days among patients admitted to hospital with acute stroke. Quality assessment was undertaken using the STROBE Statement checklist for descriptive cohort studies.

Results

Eleven descriptive cohort studies were located that investigated the dynamic of glycaemia after stroke (1-11). In addition, two of these studies provided data on detection rate for undiagnosed diabetes mellitus and pre-diabetes syndromes (9, 10).

Dynamic of glycemies

The review found that 15% [2] to 39% [8] of patients admitted to hospital with acute stroke have likely to have a history of diabetes mellitus. Among patients with no history of diabetes, between 24% [2] and 33% [2] are likely to be hyperglycaemic on admission. The prevalence of hyperglycaemia re-emerges after admission affecting up to 50% of patients with no history of diabetes at 3 months. Although mean glucose levels reduce over successive days (2, 3, 7, 15), delayed hyperglycaemic pattern are a common trend, affecting 16.5% [1] to 33% of patients [9].

Mortality

The treatment of patients with and without diagnosed diabetes who presented with stroke was found to have a greater proportion of patients who died compared to patients without diabetes. The prevalence of hyperglycaemia at admission, developing during hospital stay or 3 months follow-up, is likely to at least 30% may meet the criteria for diabetes mellitus and about 25% will need insulin for improved glucose tolerance when followed up [9]. It is important that different healthcare settings are likely to identify patients who need to be followed up with formal screening. Teach other patients who met the criteria to be referred for follow-up, and in a stroke unit be given advice on how to manage glucose levels during hospital stay, whilst preceding patients who will meet criteria for diabetes mellitus when followed up 3 months later [10].

Association with outcomes

Overall we found that patients who remain normoglycaemic were likely to have the most favorable clinical outcome after acute stroke, when compared to patient with other glycemic patterns. Although patients with transient hyperglycaemic have a poorer outcome than normoglycaemic patterns, most patients with persisting hyperglycaemia are likely to have the worst clinical outcome.

Conclusions

In these studies, hyperglycaemia was common affecting both patients with and without a history of diabetes. Delayed patterns of hyperglycaemia were relatively common indicating the need to monitor glycaemia over successive days after stroke and not just in the first 48 hours. The findings support stroke guidelines recommending that all patients with acute stroke are screened for undiagnosed diabetes. The identification of undiagnosed diabetes mellitus and better management represent an important opportunity in cardiovascular disease prevention.

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References

10. A systematic review of descriptive cohort studies was conducted. A search was conducted in MEDLINE, PubMed and Embase electronic databases for descriptive cohort studies published between January 1996 and June 2011. Studies were included if glycaemic status was monitored over at least two successive days among patients admitted to hospital with acute stroke.