Outcome of diabetic patients treated in the prehospital arena after a hypoglycaemic episode, and an exploration of treat and release protocols: a review of the literature

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Objectives: This review examines current treat and release protocols adopted by the ambulance service, and factors that may predispose patients to hypoglycaemia.

Methods: Online database searches and hand searches of journals led to 241 articles being found, of which eight were used for this article.

Results: Out of hospital treatment of hypoglycaemia is safe for most patients, but further studies are needed if positive improvements are to be made.

Discussion: There is potential for further research in this area and clarification is needed in the treat and release debate. A definitive set of protocols would be beneficial to the ambulance service.

There is debate in the ambulance service as to whether patients suffering from hypoglycaemia need to be admitted to hospital after examination and treatment in the field. It is UK ambulance service protocol that patients who have experienced a hypoglycaemic event should be transported to hospital, but this is not compulsory. This review is concerned with the outcome of patients who are treated for hypoglycaemia out of hospital, and explores the current treat and release protocols used by the emergency services.

METHODS

Search methods

The information research process included:

- A literature search
- Research and location of periodical articles, books, and reviews
- Hand searching of various journals deemed relevant to the review

Search strategies

Various sources were searched to gather relevant keywords and MeSH (Medical Subject Headings) terms together. A search was set up on Medline. This search strategy was then adapted to each database (table 1).

Articles considered relevant to the review were retrieved and critically appraised according to a set of guidelines. The research findings were collated and discussed below.

RESULTS

Table 2 gives a summary of papers found in searches.

Research and evidence of treat and release protocols

A six month retrospective study was carried out of patients who refused prehospital transport or treatment in an American EMS system. Seven per cent of refusals were associated with hypoglycaemia. In addition, leaving the scene against medical advice was associated with various factors including treated hypoglycaemia (p<0.05). Around the same time a report was published on “no-patient runs” (NPR). Carried out in Alaska, during the study period of 12 months, 2698 call outs (26.1% of all call outs) consisted of NPR but of all NPR only 2.2% (59) were diabetes-related. The study does not concentrate exclusively on diabetes-related illness, but does reveal the extent of NPR in the ambulance service.

The literature search uncovered several other pieces of research discussing treat and release protocols and the outcome of hypoglycaemic patients. The earliest of these was a retrospective study carried out in the USA in 1991. The authors developed and tested criteria regarding which patients can safely be released without transportation to hospital. On the basis of their findings, they proposed five criteria that patients should meet before being released from prehospital care without the need for further treatment:
In a further study, data were collected over an eight month period during which 132 hypoglycaemic patients refused transport after treatment with dextrose. Patients were followed up by a nurse three days after the hypoglycaemic event. Of these patients, 78% (n = 103) were successfully contacted on the telephone, and 91% (n = 94) had experienced no symptom recurrence. Of the nine patients who reported a recurrence of hypoglycaemia, six attended hospital, and three were admitted. One patient subsequently died from severe prolonged hypoglycaemia. It is interesting to note that no differences were found between hospital attendees and transport refusers in terms of clinical presentation or previous medical history. The authors conclude that transport to hospital should be “strongly encouraged” as there is a 10% chance of symptom recurrence.

Another study led to different conclusions. Over a seven month study period, 374 patients made a total of 571 calls regarding hypoglycaemia, which accounted for 5.2% of all ambulance runs. The aim of this study was to compare hypoglycaemic patients who attended hospital with those who refused transportation. Contrasting differences were found between the two groups. Patients transported to hospital were significantly older than those who refused (p < 0.05). Among the patients taking oral hypoglycaemic agents, a significantly greater number of patients were transported than refused (p < 0.05). Ninety four per cent of the total number of patients were successfully treated and did not relapse. This rate is similar to the previous study. However, the authors are less cautious in their conclusion that out of hospital treatment for hypoglycaemia seems to be safe and effective independent of whether or not patients are transported to hospital.

Both studies discuss potential shortcomings and sources of bias. An incomplete response rate in the telephone survey was a possible source of bias. They were also concerned about the number of eligible patients not included in the study and suggest a larger scale multicentre study before any firm conclusions are drawn.

Two conference abstracts on treat and release protocols were identified (Wolford et al. and A Billitier, SAEM 1998 Annual Meeting). A large study (n = 151) found that 66% of hypoglycaemic patients were transported to hospital and most of these were discharged from A&E. They found that according to their criteria, 29% of patients were suitable for treatment and release. They suggest that further research is needed, a proposal echoed in another study (A Billitier, SAEM 1998 Annual Meeting). In this last study, patients (n = 34) were followed up 24 hours after a hypoglycaemic episode. Only three patients developed complications: two developed recurrent hypoglycaemia, which was successfully self treated. One patient was found unresponsive the following morning and required long term care for hypoglycaemic encephalopathy. Treat and release protocols were adjusted to avoid a recurrence of these situations. These changes incorporated the exclusion of patients who had experienced another hypoglycaemic episode in the past 30 days, and adding a request to the release form that the patient be woken every two hours.

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REFERENCES


