

Artificial rehydration in the last days of life: is it beneficial?

Lyn Bavin

Abstract

Dehydration is a common concern in palliative care, and can be an emotive issue for patients and their families (Patchett, 1998). Family members instinctively wish to continue caring for a dying relative, and no more so than by giving nourishment. When the time comes that food cannot be tolerated, giving fluid can seem to be the last way of providing the patient with comfort and nurture. Dehydration may be perceived as the reason for death, rather than a natural part of the dying process. Is it therefore reasonable to give patients fluid by an alternative method? Hypodermoclysis (HDC), or subcutaneous hydration, is sometimes used to administer fluids in the last days of life in a palliative care setting. This article aims to consider the benefits and problems associated with artificial rehydration in these circumstances.

Dehydration has been defined as excessive loss of water from body tissues, which may be accompanied by electrolyte disturbance (Mosby, 2002). Smith and Andrews (2000) helpfully explain Billings' (1985) suggestion that severity of thirst differs according to the physiological cause of dehydration, i.e. more sodium lost than fluid (mild thirst), more fluid lost than sodium (profound thirst), and sodium and fluid lost proportionately (negligible thirst), the last being the type of dehydration that occurs most commonly at the end of life.

In my work as a palliative care staff nurse in a West of England hospice serving a largely rural area, I have observed that patients will accept fluids as long as they are physically able to drink, either unaided or with assistance. However, as weakness and fatigue increase and consciousness levels decrease towards the end of life, and drinking is no longer desired or possible, concerned relatives will raise the issue of thirst and sometimes ask whether the patient needs a 'drip'. Hypodermoclysis (HDC), or subcutaneous hydration, is a means of increasing a patient's fluid intake when there is reluctance or inability to take fluids orally. I wanted to be in a position to offer sound advice to relatives about the possible

problems and benefits associated with HDC in the last few days of life, and so embarked on a search for up-to-date information in order to increase my knowledge and enable me to discuss the subject objectively. I searched the literature with a librarian's assistance twice, latterly in spring 2006, using search terms as listed in the key words at the end of this article. The search was primarily concentrated within CINAHL and Medline, and considered literature from the early 1990s to early 2006; a period contemporary enough to have current relevance but not too short to exclude useful material. I also referred to professional sites such as those of the Nursing and Midwifery Council and the General Medical Council.

Dehydration

Possible detrimental effects

The possibility that dehydration may be burdensome to terminally ill patients is widely considered. Craig (1994) stresses the need to diagnose the reason for a patient being unable to drink, and cautions against labelling a person as being in the terminal stage of life without thorough assessment of all aspects of their condition. According to Craig, it is morally and ethically indefensible to allow a sedated patient to become dehydrated, as this can lead to circulatory collapse, renal failure, anuria and death; thus, a prediction of death becomes self-fulfilling. Her assertions seem largely based on personal observations, although in a further paper (Craig, 1999) she does cite evidence from Fainsinger et al (1994), who believe that dehydration can cause a number of detrimental symptoms. These include confusion, restlessness, renal failure, opioid toxicity, increased risk of pressure sores and constipation, dry mouth and thirst. Craig does concede that providing it is possible to diagnose impending death accurately, dehydration in the last few days of life may be acceptable, as irreversible

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disease naturally progresses and the patient weakens and loses interest in fluids. Soden et al (2002) note the difficulty of actually making a 'diagnosis of dying'. Twycross and Wilcock (2001) also hold the view that patients dehydrated through acute, reversible causes should be rehydrated for symptom relief, but say that moribund patients who lose interest in oral fluids are not distressed providing they are given adequate oral care.

Thirst and dry mouth, terms which McCann et al (1994) found to be used interchangeably by patients, are the symptoms commonly reported to cause most discomfort when patients are dehydrated (Craig, 1994, 1999; Haas, 1994; Sutcliffe and Holmes, 1994; Roberts, 1997; Patchett, 1998; Ede, 2000; McCaulay, 2001), but clinicians' opinions are mixed, and actual evidence to support this view is scanty. Dunphy et al (1995) conclude that little evidence can be found regarding the efficacy or otherwise of mouth care as opposed to rehydration in relieving dry mouth and thirst. Viola et al (1997) carried out a detailed systematic review of six key papers examining the existing clinical evidence pertaining to the effects of fluid status and rehydration in the dying, but still could not make firm recommendations for clinical care, including mouth care.

Patchett (1998) gives possible causes of dry mouth and thirst in the terminally ill other than dehydration, e.g. drugs such as opioids, some non-steroidal anti-inflammatory drugs (NSAIDs), and tricyclics, local radiotherapy, chemotherapy and the disease process itself. Dunphy et al (1995) suggest that the use of anti-secretory drugs, mouth breathing and oral infection contribute to dry mouth and thirst. Some studies have attempted to analyse blood results to see whether the biochemical picture can indicate the levels of discomfort experienced through dehydration. Ellershaw et al (1994) concluded that many dying patients have broadly normal biochemistry, and that symptoms such as thirst and dry mouth are not related solely to hydration levels. Smith and Andrews (2000) comment that numerous studies have found that when terminally ill patients deteriorate slowly, their electrolytes are predominantly within normal ranges, unlike those with acute dehydration.

Possible beneficial effects

A number of authors consider the possible benefits of dehydration to the dying patient, e.g. Sutcliffe and Holmes (1994), Patchett (1998), McCaulay (2001), and Dalal and

Bruera (2004). Dehydration may reduce gastric and pulmonary secretions, thus lessening the likelihood of vomiting, coughing and pulmonary congestion or rattle. If oedema is reduced, there may be less pressure on internal organs and tumours, or on peripheral nerves, leading to pain reduction. Reduced pain and therefore less need for analgesia may also result from metabolic alterations, ketone accumulation, and increased production of natural endorphins and concentration of opioids. Decreased renal function may reduce urinary incontinence and possible skin contamination and soreness, or the need for catheterisation and associated complications.

However, all these suggested benefits seem to be proposed rather than proven. Viola et al (1997) believe they are based on clinical experience, opinion and anecdote. Ede (2000) states that many believe multi-system failure (facilitated partly by dehydration) as death approaches leads to less suffering, an opinion shared by Smith and Andrews (2000). It seems self-evident that body systems fail at death, but neither paper demonstrates that reduced suffering follows. Sutcliffe (1994) posits that there may be decreased awareness of suffering due to electrolyte imbalances which may accompany dehydration, but other authors say that electrolyte changes are less usual in the very ill (see above).

Rehydration

Possible detrimental effects

In contrast, a number of ill effects may result from rehydration, as suggested by Haas (1994) and Dalal and Bruera (2004). Rehydration may lead to increased pulmonary and gastric secretions, with more likelihood of congestion and rattle, nausea and vomiting. It may lead to increased peritumour, cerebral and peripheral oedema, also to increased urine output with associated management problems. In addition, Viola et al (1997) postulate that HDC may divert professionals from holistic care, create a barrier to physical affection with the family, and lead to denial of the severity of the patient's condition, giving an artificial sense of hope (Haas, 1994). Sutcliffe (1994) considers the invasiveness of the procedure, together with risks such as fluid overload and infection at the cannula site to be possibly detrimental.

Possible beneficial effects

Conversely, there are several arguments to suggest that rehydration may be beneficial to dying patients, but these were found to

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be more anecdotal than evidence-based, or a different interpretation of, or emphasis on, similar arguments.

The provision of fluid provides a basic human need, and as there is no evidence that rehydration actually prolongs life to a patient's detriment, fluids should be given as a minimum standard of care (Fainsinger and Bruera, 1997; Dalal and Bruera, 2004). These authors also suggest that hydration may give comfort by preventing confusion, restlessness and neuromuscular irritability, although the discussion around this admits that there may be multiple inter-related causes of these symptoms in dying patients, making it difficult to attribute lack of fluid alone as the root cause.

Dalal and Bruera (2004) report on a recent small study of 51 terminally ill cancer patients with reduced fluid intake. The patients were randomised to receive either one litre or 100 mls (placebo) of fluid, either IV or via HDC, over four hours on two consecutive days. Both patient feedback and observed improvement in specific symptoms, including myoclonus and sedation, led the authors to conclude that rehydration can improve symptoms in this group of patients and would merit larger studies. Fainsinger and Bruera (1997) make a plea that rehydration should at the very least be considered as a strategy to relieve 'agitated delirium' before initiating sedation.

Although the arguments are complex, it is suggested by some that thirst and dry mouth may be alleviated by artificial rehydration when oral intake is rejected or impossible. Cerchietti et al (2000) carried out a randomised, comparative and prospective study of 42 terminally ill cancer patients, aiming to assess whether HDC might relieve thirst, chronic nausea and delirium. Both hydrated and non-hydrated patients were given the same drug treatment and mouth care. After 24 hours, both groups of patients experienced 'significant improvements' in relief of thirst and chronic nausea, but with no difference in delirium. However, after 48 hours, only the improvement in chronic nausea was maintained, and only in hydrated patients. Steiner and Bruera (1998) and Dalal and Bruera (2004) suggest that terminally ill cancer patients can be adequately hydrated using much lower volumes than for average medical/surgical patients. Haas (1994) and Sutcliffe (1994) propose that hydration may reduce dulling of consciousness and increase alertness and wellbeing. Haas (1994) suggests

hydration may give a psychological boost and hope to patients and relatives.

Available research

There is widespread agreement that there is a paucity of robust research about the value or otherwise of rehydration in terminally ill patients (Haas, 1994; Sutcliffe, 1994; Dunphy et al, 1995; Roberts, 1997; Viola et al, 1997; Ede, 2000; McCaulay, 2001; Moriarty and Hudson, 2001; Lanuke and Fainsinger, 2003; Payne et al, 2004; Dalal and Bruera, 2004). My review of the literature showed little progress in advancing the arguments over the years, and no clear evidence suggesting that HDC can be conclusively recommended. Papers commonly conclude with suggestions for further research.

Sutcliffe and Holmes (1994) point to questions deserving of further investigation throughout their text. Viola et al (1997) propose four particular areas of study, stating a requirement for potential palliative care researchers to agree a common set of outcomes and measurement tools, and suggesting the need for more systematic reviews. Steiner and Bruera (1998) call for randomised controlled trials, while acknowledging the major ethical obstacles of research in a terminally ill population. Huertas and Billings (2004) rehearse the many difficulties associated with the design of controlled studies in a terminal population, particularly, as Fainsinger (2004) comments, when meeting ethical constraints.

Making a decision

Various guidelines exist which may assist clinicians to reach the best decision they can in the present state of knowledge. Twycross and Wilcock (2001) provide a concise summary of indications for and contraindications to rehydration which has some relevant pointers, but their emphasis is on patients in palliative care generally rather than exclusively in the last few days of life, and they refer to parenteral hydration as well as the subcutaneous route.

Steiner and Bruera (1998) and Dalal and Bruera (2004) outline the clinical assessment of hydration status in detail, but emphasise the difficulties inherent in such an assessment, discussing how subtle the signs and symptoms of dehydration may be in the dying patient. They recommend that assessment should be highly individualised, based on careful clinical review, potential risks and advantages of giving fluids and the patients and families wishes. They suggest some useful questions for the clinician to consider in

Box 1. Considerations in the decision-making process regarding hydration

- Is the patient dehydrated?
- What are the symptoms caused and/or aggravated dehydration?
- What are the expected advantages of re-hydration?
- What are the disadvantages of hydration?
- What are the views of the patient and family?
- What are the individualised goals of care?

making such a decision (see *Box 1*.)

Cerchietti et al (2000) stress the importance of a holistic approach, ensuring that social, spiritual and psychological aspects of care are not subsumed by the physical when considering an intervention such as HDC. Assessment can best be made by a multi-disciplinary team, e.g. social worker, chaplain, and dietitian in addition to medical and nursing staff. The skills and knowledge unique to each professional's discipline should give optimum understanding of each patient's best interests. Vital background advice is given by professional organisations (NCHSPCS, 1997; GMC, 2002; NMC, 2004). Assessment of survival must be a key part of the discussion. A prognosis of weeks to months rather than a few days may lead to a different decision.

Ethical considerations

In making a decision to commence artificial rehydration, ethical considerations must play a key part. Although a full consideration of these is outside the remit of this paper, it is important to be aware of certain principles:

- Beneficence: what is in the patient's best interests
- Non-maleficence: doing the patient no harm
- Doctrine of double effect – will the giving or withholding of HDC have an unintended effect in addition to the intended one which will do the patient harm?
- Autonomy: what the patient wants
- Informed consent – assisting the patient to understand the complex issues involved means practitioners have a responsibility to explain the pros and cons succinctly
- Capacity: is the patient able to understand and weigh information sufficiently to give informed consent? The dilemma may be greater if the patient is unable to express a choice and their wishes have not previously been made clear (Dunphy et al, 1995).

The debate provoked in the UK by Lord Joffe's Bill on assisted dying has meant an

increased awareness and discourse about advanced directives. The Mental Capacity Act which came into force in England and Wales in April 2007 has also highlighted issues of capacity, consent and best interests.

Reflection

In addition to the knowledge gained in reviewing the literature about HDC and ethical considerations, it would be useful to revisit other pertinent topics to enable me to inform patients and relatives appropriately. These include issues such as the nature of hope and effective communication skills. It would also be relevant to review literature on evidence-based mouth care.

I am mindful of Sutcliffe's (1994) distinction between dying from dehydration, and dying as a result of a disease process of which dehydration is a part. We practice in an age where 'there should not be the slightest grounds for suspicion that death was due to anything but disease' (Craig, 2004). Roberts (1997) advises that it is often only after a treatment has been commenced that its benefits or ill effects may be clarified. I suggest that on balance, a reasonable approach if there is anxiety about possible dehydration would be to administer subcutaneous fluids for a pre-defined period, with informed consent and regular, thorough review by the multi-disciplinary team. Soden et al (2002) stress that a decision to withdraw HDC does not mean that compassionate care is abandoned, but that efforts to meet all personal needs and control symptoms will continue unabated. It is one of the enigmas of terminal care that the person best placed to tell us whether we have met their needs is unable to give that feedback.

Conclusion

The existing evidence about the benefits of rehydration at the end of life is equivocal. Until further research is undertaken, we must avoid generalisation, and rely on careful individual assessment and frequent review by the multi-disciplinary team against the background of ethical guidelines provided by professional organisations.



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Key words

- Hypodermoclysis
- Subcutaneous fluids
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- Terminally ill
- Palliative care

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