

## The Hypodermoclysis – Comfortable Way to Rehydration in Patients with End-Stage Dementia

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### Abstract

**Introduction:** Dehydration is common condition in elders. Dehydration may lead to confusional states in elderly, higher risk of infection, disturbed homeostasis, higher risk of falls, cardiac failure or acceleration of frailty phenomenon. Rehydration should begin as early as possible, should be safe and comfortable both for a patient and nursing staff.

**Material and Methods:** Open and unblinded study has been designed. 48 patients with terminal phase of dementia requiring rehydration were involved into the study. Hypodermoclysis was used for rehydration. Interviews with nurses and monitoring of hypodermoclysis complications was done.

**Results:** All nurses appreciated spare of time and effortlessness of subcutaneous application compared to intravenous application, all of them have reported highly comfort of such application for patients. 75% nurses (N=12) reported initial disbelief in effectiveness of hypodermoclysis. Hypodermoclysis complications such as local edema, local infection, local erythema were rare and at case report level.

**Conclusion:** Hypodermoclysis has been well tolerated by patients with terminal phase of dementia with low rate of complications. Nurses reported spare of time and effortlessness of subcutaneous application, comfort for patients. Hypodermoclysis should be considered as a comfortable procedure for fluid replacement in terminally ill elders with dehydration.

**Keywords:** Rehydration; Hypodermoclysis; Elders; Terminal phase of dementia; Palliative care

### Introduction

Seniors are more vulnerable to dehydration in comparison with general population [1]. Threshold of thirst perception is usually altered in elders followed by decreased need of peroral fluid intake [2]. Another cause of developing dehydration comes from physiological fluid/lipid body proportion changes in elderly (increased body lipid mass), environmental condition (warm weather, unaccess to beverages), unsuitable medication (polypharmacy including diuretics) or various pathological conditions (diarrhea, increased sweating during fever, vomitus, fluid interstitial leakage of fluid which can be seen in ascites or generalized edema) [3-5]. Higher risk of dehydration is detected among patients in postoperative care, patients undergoing hemodialysis or patients with terminal nephrotic illness [6-8].

Dehydration is severe condition which may lead to confusional states (delirium), higher risk of uroinfection, disturbed homeostasis (electrolyte imbalance, renal dysfunction), higher risk of falls (thanks to hypotension), higher risk of cardiac failure (as a result of electrolyte imbalance, decreased preload, reactive tachycardia in hypotension), acceleration of frailty phenomenon [9,10]. All the staff should be aware of risk of developing dehydration in elders and rehydration should be imperative for any caregivers [11,12].

Fluid replacement should begin very early, before development of dehydration. There are different ways to replace fluids: peroral intake, intravenous therapy, nasogastric tube rehydration, enteral stomach tube or hypodermoclysis (subcutaneous infusions) [13,14]. Peroral intake should be preferred whenever possible, followed by renewed method – hypodermoclysis [14].

Subcutaneous rehydration (called hypodermoclysis) is a reborn method for fluid replacement in mild or moderate dehydration [13,14]. Despite many prejudices, hypodermoclysis is suitable for patients with

difficult intravenous access (increased venous fragility, obese patients with no available veins), terminally ill patients requiring palliative care approach [5,12]. Hypodermoclysis is not recommended in cases of severe dehydration (severe hypovolemia which requires prompt volume supply) or heart or renal failure [3,7,14]. Administration of isotonic infusates is recommended more than use of hypertonic or hypotonic infusates. Limit for subcutaneous fluid replacement is according to different authors 2 litres of infusate per day [14]. Hypodermoclysis complications are minimal. Local complications (local edema, local infection, local erythema) have been reported [8,10,14].

### Objective

To evaluate clinical experience and side effects of hypodermoclysis in elders with terminal phase of dementia.

### Material and Methods

**Design and patients:** the study was open and unblinded. The study took care in women psychogeriatric wards of Mental hospital Kromeriz, Czech Republic, from January 2013 to January 2014. Patients (N=48) with terminal phase of dementia (immovable patients, with no or minimal verbal contact, with critical cognitive decline, MMSE score

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