

Prolonged Intravenous Line Access in a Terminally Ill Patient, Consequences and Suggestions

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Abstract

Prolonged and neglected use of an intravenous (IV) line could be limb- and life-threatening. In many terminally sick cancer patients of rural India, pain management is a major concern. It is a very common practice by local practitioners to give IV fluids and pain medications in such patients. Where IV access is difficult, a secure venous cannula is kept *in situ* for long periods to administer pain medicines and fluids. This article tries to highlight the dangers a neglected IV line poses to limb and life and tries to stress on the importance of a subcutaneous route for pain medication administration in terminally ill palliative patients.

Keywords: Intravenous, palliative, ulcer

INTRODUCTION

A prolonged and injudicious use of a peripheral intravenous (IV) line may have significant untoward consequences in a terminally ill patient. An IV line is often not required and may pose a threat to the limb and quality of life of these suffering patients.^[1] This report highlights a rare complication following use for more than 28 days of the same IV cannula for pain management and irrational fluid administration which resulted in much suffering for the patient and her family. Ill effects of persisting with an IV line and ignorance about use of the subcutaneous route for drug and fluid administration have also been addressed.

CASE REPORT

This is a report of a 57-year-old homemaker living in one of the most underdeveloped areas of India. She had been diagnosed with mandibular carcinoma at a hospital she consulted about 2 years before she presented to us. She had undergone surgery and radiotherapy at a government hospital in the interim. Unable to bear her treatment costs and exhausting all resources, the family had discontinued her anticancer treatment. Her disease had metastasized to involve both lungs and multiple vertebrae. She was in severe pain for months and for which she got admitted intermittently to one of the nearby health centers. The doctors treating her pain administered her IV

analgesics. After one such visit to the local hospital, she was discharged to her village home with a 20G IV cannula *in situ* in her left leg. This cannula was secured after great difficulty. It is a common misconception in rural India that IV dextrose rejuvenates and energizes the body. The patient had anorexia and difficulty in eating. A local practitioner who was usually consulted by the family for symptomatic management decided to continue with the 20G IV cannula, and he administered fluids, antibiotics, and multivitamins besides analgesics through this cannula. The treatment continued for more than 28 days even though the patient complained of pain during administration of drugs. Fearing the ordeal of multiple pricks, she endured pain of injection to receive the analgesics she required for her disease. It was only once the patient refused administration of any medicine through this cannula due to searing pain did the unqualified local practitioner decide to remove it. There were signs of redness and abscess formation as per history elicited from the relatives. This patient was then managed at home by the same practitioner with intramuscular

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injections of antibiotics and analgesics for almost a week. With pain of disease and the infection at cannula site increasing by the day, the patient referred to us at a tertiary-level hospital in septic shock.

On admission at our hospital, the patient had a low blood pressure with a large abscess on the medial aspect of her left leg. There was threat of gangrene of her leg. This wound was debrided urgently and dressing was done. Bloodstream infection was managed with appropriate antibiotics. Multiple dressings were required, and an ulcer had developed. Wound was just overlying the left tibial bone [Figure 1]. Her physical pain was managed initially using parenteral analgesics and later shifted to oral morphine. Her psychological and spiritual pain was also addressed by our team for complete healing. Her family members were explained about the progress and natural course of the disease. Futility of IV fluid administration, alternate transdermal route of opioid administration, and technique to introduce a butterfly for subcutaneous administration of drugs were shown and explained to them.

DISCUSSION

Management of palliative patients by practitioners in some parts of rural India is along the same lines as a healthy person who has fallen ill. Injudicious IV fluids and drugs which may not be required in these terminally ill patients commonly results in prolonged and unsafe use of an IV cannula.^[1]

Educating a healthcare provider regarding indications for intravascular catheter use along with proper procedures for insertion and maintenance of intravascular catheters and appropriate infection control measures has shown to be helpful (Category IA).^[2] An upper extremity is the recommended site for IV catheter insertion, and a catheter inserted in a lower extremity site should be replaced to an upper extremity site as soon as possible (Category II).^[2] It may be noted that in the case described, a cannula was inserted in her left leg for a long time. Guidelines recommend a midline catheter or peripherally inserted central catheter, instead of

a short peripheral catheter, when the duration of IV therapy is likely to exceed 6 days.^[2] In many parts of India, these guidelines may be difficult to follow for a variety of reasons. Healthcare access, social structure, and cost of treatment have important bearing on practices. Educating the practitioners is a possible but painstaking solution. Many patients and relatives demand an IV line and IV fluids. It provides solace to the family, and maybe even to the patient for whom medical treatment is underway. Regarding injudicious fluid transfusions which necessitate inappropriately prolonged IV access, Stockdale reported a survey on 50 junior doctors and noted that 20% of these doctors thought withholding hydration sped up the time to death, while 30% thought it improved survival and so prolonged suffering.^[3] Some experts believe that fluids can make dying patients more comfortable, but they can also cause effusions and ascites.^[4] Need for food and water decreases during the dying process; thus ceasing to eat and drink is a normal part of this process.^[4] IV fluids do not reduce thirst though drinking water or sucking on ice chips may work.^[5] A Cochrane review considered four studies which suggested no difference in effect of artificial hydration on the quality and length of survival of patients as compared to no hydration.^[4] Hydration up to 1 l/day of fluids did not improve symptoms, quality of life, or survival compared with placebo.^[6] Addressing this issue, National Clinical Guideline Centre takes into consideration the social and religious fabric of a location and states that when considering clinically assisted hydration for a dying person, an individualized approach should be taken.^[7] If they have any cultural, spiritual, or religious beliefs that might affect decision to accept or refuse treatment, it needs to be respected.^[7] The level of consciousness, presence of swallowing difficulties, level of thirst, risk of pulmonary edema, and whether even temporary recovery is possible may also dictate the individualized treatment.^[7]

When fluid administration is being contemplated and there is no IV access, subcutaneous route must be considered in palliative care. A butterfly needle inserted into the skin at a 45° angle and covered with a sterile, transparent dressing serves the purpose.^[8] It is referred to as hypodermoclysis and widely used in western nations.^[8] It has many advantages over IV fluid administration, including ease of administration, fewer systemic side effects, cost savings, and appropriate use of staff time through ease of cannula insertion.^[8] Up to 2 l of fluid/day may be given by the subcutaneous route. Isotonic solutions such as 5% dextrose or 0.9% saline solutions with up to 34 mmol of potassium can be given safely with each liter of fluid.^[9] This is an adequate amount of fluid for a dying patient. There are many drugs used in palliative care such as morphine, hydromorphone, haloperidol, midazolam, cyclizine, and prednisolone, which may be subcutaneously administered with no problem in more than 90% of patients.^[10] Use of the subcutaneous route should thus be encouraged for palliative care patients particularly when healthcare access is difficult.



Figure 1: Note a wide healing ulcer on medial aspect of the left foot due to the prolonged use of an intravenous cannula

In our case, there was an obviously inflamed vein with all features of severe phlebitis. The patient had difficulty in feeding due to her malignancy and intense pain from her metastatic disease. There was a definite need of analgesics and possibly parenteral fluids. We believe that instead of using an inflamed IV line, a subcutaneous route should strongly be encouraged. The IV cannula should have been removed at first sign of inflammation. Oral analgesic titration should have been attempted; else, the subcutaneous route or transdermal patches should have been considered. Timely removal of the IV cannula and a judicious use of subcutaneous butterfly cannula could have easily alleviated much of the suffering this patient had to endure.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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