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Permanent Venous Access Via Subcutaneous Infusion Port in Severe Asthma

Odd Mørkøe, M.D.;† Torben Wiborg, M.D.;‡ and Amund Galevik, M.D., Ph.D., F.C.C.P.†

A subcutaneous infusion port was implanted in a 34-year-old patient with frequent and severe asthma attacks to ensure prompt and reliable venous access. Difficulties with peripheral venous access were possible cofactors necessitating mechanical ventilation on two occasions before this implantation. The method described is simple and seems useful for asthmatics in need of frequent parenteral medication. (Chest 1990; 98:1537)

The use of a subcutaneous infusion port for chronic venous access in cancer chemotherapy, parenteral nutrition, and antibiotic therapy in certain patients with recurrent respiratory tract infections has become well established during the last ten years. We report SIP used in a patient with unstable asthma where peripheral venous access was poor due to frequent infusions and obliterated veins.

CASE REPORT AND METHODS

A 34-year-old man suffered from unstable asthma with several acute severe attacks which required mechanical ventilation on two occasions (May 1986 and October 1987). He did not tolerate systemic steroid treatment because of gastrointestinal and psychologic side effects. On several occasions, he experienced psychotic symptoms even with minor doses of systemic prednisolone, and he refused further treatment with systemic steroids. He received local treatment with salbutamol and beclomethasone and systemic treatment with salbutamol and theophylline at optimal doses. The plasma-theophylline level varied greatly, probably due to poor compliance concerning tablet intake.

From January 1986 to October 1987, he had 13 admissions to the hospital because of severe asthma attacks. Due to frequent infusions, peripheral veins obliterated, and to ensure a quick and safe venous access in emergency, a subcutaneous infusion port was placed in October 1987 (Norport, Norfolk Medical Products, Skokie, II). The SIP consisted of a conical chamber with a self-sealing rubber septum connected to a central venous catheter. All parts of this device were placed subcutaneously. For injection, a special needle (Huber point) was inserted through the skin into the chamber. When using a 22 G (0.7 mm) needle, the septum withstands at least 2,000 perforations (manufacturers unpublished data).

The implantation was done using local anesthesia, with a percutaneous technique for introduction of the central venous catheter. The right internal jugular vein was used, and the SIP placed in the right infracavicular region.

The patient had follow-up visits as an outpatient once or twice a week. Theophylline in plasma was controlled in blood drawn from the SIP, and additional short-time infusions of 100 to 200 mg theophylline were given if the plasma-theophylline level so permitted. On several occasions, he also received infusions with beta-agonist drugs. The system was flushed with 10 ml of saline solution containing 0.5 IU heparin per milliliter prior to and at the completion of infusion, and filled with 5 ml heparinized saline solution (100 IU/ml) between infusions. This will eliminate the risk of coagulation in the catheter for at least one month.

There has been no complication with the use of SIP. The patient tolerated the device well and has had no limitation to normal activities. The catheter has presently functioned for 730 days. The SIP allows frequent blood sampling, which is of great importance in the monitoring of plasma-theophylline at the follow-up visits.

DISCUSSION

The application of SIP in asthma is exceptional. In this particular patient, the intolerance to systemic steroid treatment and sudden, severe asthma attacks indicated the need for reliable venous access. The patient had two previous periods with ventilator treatment. He now feels confident with the SIP and has been able to be at full time work most of the last two years.

The most important indications for the use of SIP have been cancer chemotherapy and total parenteral nutrition. Complications have mostly been minor, and major complications are rare. Our patient has had infusions once or twice weekly for two years and no complications have occurred so far. Some patients with SIP are taught self-administration of drugs, in particular, patients receiving parenteral nutrition or antibiotic therapy. We would not consider self-administration in our patient because of the potential hazards of the drugs used, and the possibility of overdosage in a critical situation.

We believe that SIP can be a useful alternative in brittle asthmatics with need for frequent infusions where peripheral veins are poor and a safe venous access is critical.

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*From the Departments of †Thoracic Medicine and ‡Anesthesiology, Haukeland Hospital, University of Bergen, Norway. Reprint requests: Dr. Mørkøe, Thoracic Medicine, Haukeland Hospital, N-5021 Bergen, Norway