Uncommon complication of pulmonary arterial hypertension treatment with the parenteral use of treprostinil

Małgorzata Zielska[1], Maciej Lewandowski[1], Katarzyna Widecka[1], Marcin Kurzyna[2], Piotr Kędzierski[2], Naser Dib[3], Jarosław Kaźmierczak[1], Małgorzata Peregud-Pogorzelska[1]

1 Department of Cardiology, Pomeranian Medical University, Szczecin, Poland
2 Department of Pulmonary Circulation and Thromboembolic Diseases, Medical Centre of Postgraduate Education, European Health Centre Otwock, Otwock, Poland
3 Department of Cancer Surgery, European Health Center Otwock, Otwock, Poland

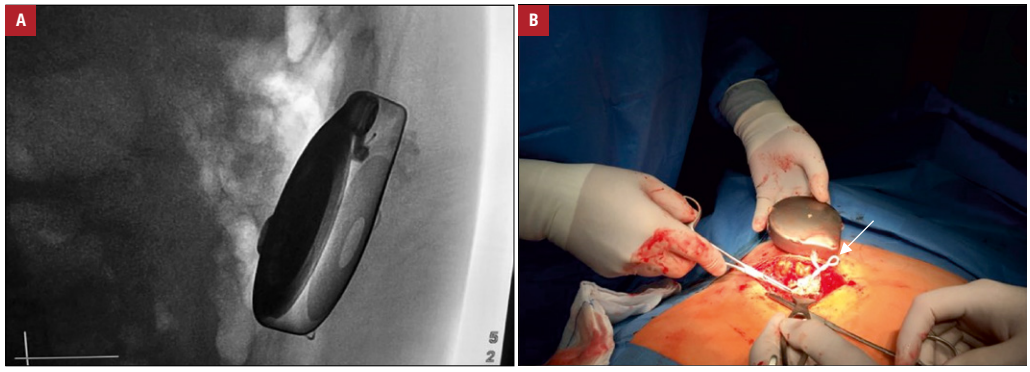

FIGURE 1 **A** – fluoroscopic image of the rotated LenusPro pump; **B** – twisted catheter for intravenous infusion of treprostinil, found during a reoperation 84 days after pump implantation (arrow)

Pulmonary arterial hypertension (PAH) is characterized by remodeling of pulmonary arterioles, which leads to right ventricular failure.[1] The treatment of PAH involves the use of prostacyclin analogues, eg, treprostinil,[1,2] which may be administered either intravenously or subcutaneously.

A 28-year-old woman diagnosed with idiopathic PAH was treated with treprostinil, bosentan, and sildenafil. Treprostinil was administered subcutaneously, using a microinfusion pump, and the dose was gradually increased. On the second day of therapy, the patient developed persistent erythema (Supplementary material, *Figure S1*). The optimal dose of treprostinil was reached at 66 ng/kg/min, and then a decision was made to switch from subcutaneous to intravenous drug infusion. A Lenus Pro pump (Tricumed Medizintechnik GmbH, Kiel, Germany) was implanted (implantation of this pump system was described elsewhere by Desole et al[3]). Abdominal ultrasonography carried out 28 days after implantation, during the first pump refill, showed several compartments filled with fluid that precluded pump refill and required emptying with a puncture (a total of 230 ml of bloody fluid). After further 28 days, a hematoma around the pump was detected again and 80 ml of fluid was evacuated.

During the next pump refill (84 days after implantation), it was impossible to pass the membrane. The fluoroscopic examination revealed a 180° pump rotation (FIGURE 1A): the membrane was oriented inwards, and the back of the pump, towards the abdominal skin. The patient complained of pain in the subclavian area at the site

Correspondence to:
Małgorzata Zielska, MD,
Department of Cardiology,
Pomeranian Medical University,
ul. Powstańców Wielkopolskich 72,
70-111 Szczecin, Poland,
phone: +48 91 466 13 78,
email:malzielska@gmail.com
Received: September 9, 2020.
Revision accepted:
October 25, 2020.
Published online:
November 4, 2020.
Kardiol Pol. 2021; 79 (1): 79-80
doi:10.33963/KP.15672

of catheter implantation, which persisted for a few days. The catheter position was normal on radiography and ultrasonography.

A revision surgery was performed to correct the position of the pump and catheter (several twists of the catheter were found, but these fortunately did not cause occlusion) (FIGURE 1B). The revision was complicated by the formation of hematoma, which required surgical intervention and drainage. No complications occurred during further 10-month follow-up. Despite the previous complications, the patient reported better quality of life. The clinical and biochemical parameters of the patient improved over a 10-month follow-up period (Supplementary material, *Figure S2*).

The continuous infusion of treprostinil is associated with potential complications. Pain at the injection site is the most commonly reported complication of using the subcutaneous administration route, which forces dose reduction or drug withdrawal.[1] The use of an intravenous pump eliminates discomfort and the risk of skin reaction at the injection site, which improves the health-related quality of life.[4] Nevertheless, a therapy based on the use of an intravenous infusion pump may also be associated with complications. Richter et al[5] reported that 60 out of 129 patients with an implanted Lenus Pro pump had complications. In a single case, the pump was displaced and required surgical repositioning. To our knowledge, this is the first report describing the case of pump rotation with multiple twists of the catheter causing discomfort due to pulling pain in the subclavian area yet no disturbance in drug delivery. Patients with symptoms (pain and discomfort) at the site of pump implantation or catheter entrance into the vein require specific diagnostic workup, including fluoroscopy, to assess the position of the pump.

SUPPLEMENTARY MATERIAL

Supplementary material is available at www.mp.pl/kardiologiapolska.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

HOW TO CITE Zielska M, Lewandowski M, Widecka K, et al. Uncommon complication of pulmonary arterial hypertension treatment with the parenteral use of treprostinil. Kardiol Pol. 2021; 79: 79-80. doi:10.33963/KP.15672

REFERENCES

1 Galiè N, Humbert M, Vachiery JL, et al. 2015 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension. Eur Heart J. 2016; 37: 67-119.

2 Malaczynska-Rajpold K, Kurzyna M, Koteja A, et al. The "bouncing" catheter. Cardiol J. 2016; 23: 552-553.

3 Desole S, Velik-Salchner C, Fraedrich G, et al. Subcutaneous implantation of a new intravenous pump system for prostacyclin treatment in patients with pulmonary arterial hypertension. Heart Lung. 2012; 41: 599-605.

4 Kurzyna M, Małaczyńska-Rajpold K, Koteja A, et al. An implantable pump Lenus pro® in the treatment of pulmonary arterial hypertension with intravenous treprostinil. BMC Pulm Med. 2017; 17: 162.

5 Richter MJ, Harutyunova S, Bollmann T, et al. Long-term safety and outcome of intravenous treprostinil via an implanted pump in pulmonary hypertension. J Heart Lung Transplant. 2018; 37: 1235-1244.