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CASE REPORT

A case review of a patient experience of photopheresis using a peripherally inserted central catheter

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Abstract

Extracorporeal photopheresis (ECP) is a cell based immunomodulatory therapy in which the patient is attached intravenously to a cell separating machine. During ECP a patient's blood is collected via either a central venous access device (CVAD) or a peripherally inserted 16G arterial venous fistula needle in either one or both antecubital fossa. However, patients presenting for ECP with GVHD repeatedly present a challenge to the ECP team due to poor venous access resulting from previous therapies and skin changes. The use of peripherally inserted central venous catheters (PICCs) offers an alternative route of vascular access for this cohort of patients. Here we present a case report of a patient successfully treated with ECP following the insertion of a PICC line.

KEYWORDS

extracorporeal photopheresis, graft versus host disease, peripherally inserted central venous catheters

1 | INTRODUCTION

Extracorporeal photopheresis (ECP) is a second line treatment in patients with steroid refractory, dependant, or intolerant graft versus host disease (GvHD).[1] ECP is a cell based immunomodulatory therapy where peripheral blood undergoes apheresis, treatment with a photosensitiser and exposure to ultra-violet light which induces apoptosis of lymphocytes, including disease-enhancing activated T cells,[2] then returned to the patient.[3] Patients are attached intravenously to a cell separating treatment machine[4] via either central venous access device (CVAD) or peripherally inserted 16G arterial venous fistula needle in either one or both antecubital fossa. ECP treatment is performed on two consecutive days, every 2-4 weeks depending on disease stage.[1] GvHD patients present a challenge to ECP due to poor peripheral venous access from previous therapies and skin changes. Resulting in multiple cannulation attempts on a regular basis, leading to bruising, haematoma, transient pain and syncope, or treatment aborted.[5]

Peripherally inserted central venous catheters (PICCs) offer an alternative route, with relatively simple insertion at the bedside under local anaesthesia, relatively low rates of complications, such as infection and improved patient comfort.[6–8] PICCs have been used extensively on general wards and in outpatients for several years, the use a PICC has not been fully explored within the UK for ECP.

We present a case report of a patient treated within ECP following the insertion of a PICC line.

2 | METHODS

ECP is delivered using a Therakos Cellex machine version 5.1 provided by Mallinckrodt Pharmaceuticals (Therakos [UK] Ltd.).[9] The device aims to process 1500mls whole blood, using heparin as an anticoagulantat 12500IU/L (international units). Treatment takes on average 2-2.5 hours to complete. The device is capable of a maximum blood flow rate of 50 mL/min. A blood prime was not required as the patients' full blood count was within normal parameters.

3 | CASE REVIEW

The 66-year-old female (weight 96 kg) diagnosed with acute myeloid leukaemia (AML) in November 2014. Following three courses of intensive chemotherapy, she proceeded to a reduced intensity matched sibling allograft transplant in July 2016, followed by an additional donor lymphocyte infusion in November 2016. In February 2017 the patient was diagnosed with moderate mucosal chronic graft versus host (cGVHD) disease which was initially treated with prednisolone. In June 2017 her cGVHD worsened, therefore ECP was commenced.

In June, the patient attended for four treatments, only one treatment was successful, with three being aborted due to failed venous access attempts using peripheral single needle mode. In July the decision was taken to insert a CVAD. Six further treatments followed before the line spontaneously fell out. A further two treatments via cannula, however on both occasions it required numerous attempts to successfully cannulate. After discussions including the patient, the consultant haematologist, and the hospital vascular access team it was decided to trial ECP using a PICC line. The PICC was inserted by the hospital vascular access team in October 2017. An Xcela (Navilyst Medical Inc, Marlborough) power injectable single lumen 4 French PICC, inserted with ultrasound guidance into the basilic vein of patient's upper left arm. Fluoroscopy assisted PICC placement was adopted to ensure optimal tip location in the lower superior vena cava (SVC). PICC placement was uneventful. Maintaining the tip at this essential location was deemed an essential component of successful treatment therefore, the device was secured with SecuraCath (Interrad Medical Inc, Plymouth). Infection prevention component of this patients care included the use of a chlorhexidine impregnated sponge dressing at the PICC insertion site and Curos disinfecting port protector (3 M St Paul).

The patient attended for two treatments on alternative weeks as scheduled and received 15 treatments using the PICC with no adverse events. The PICC during treatment reached a maximum blood flow rate of between 15-20 mL/min, slightly slower than other methods. After each treatment the line was locked with TauroLock hep500 and on the none treatment week the line was redressed, accessed, flushed, and locked to ensure patency of the line. As steroids had been discontinued in this patient, and with no evidence of GvHD, ECP was stopped. With no further need for it, the PICC line was removed. As completing ECP the patient is monitored in the post bone marrow transplant clinic.

4 | CONCLUSION

Based on this case review the use of a PICC for ECP represents a useful and safe alternative to CVAD for patients with difficult peripheral venous access. The ECP unit intends to roll out the use of a PICC as an alternative to more patients with difficult access, which will be monitored, and data collected for future studies.

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