can be difficult to see on a radiologic study, thereby underestimating the actual incidence of CLI.

The definitive treatment of the wounds should be guided following Schaefer-Fuhrman classification. Cases #2 and #3 required urgent ORIF surgery, since the early surgical management of patients with a surgical indication has proven to bring beneficial effects to these patients' clinical progression, which makes it is the most importance aspect of the care provided at a capable center.[10]

With our series of cases we wanted to conclude that CLI is an uncommon entity where clinical suspicion, the optimal early management of the airway, and multidisciplinary care in a capable center may impact positively the prognosis of patients.

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R. Viejo-Moreno*, C. García-Fuentes, C. Mudarra-Reche, L.J. Terceros-Almanza, M. Chico-Fernández

Unidad de Cuidados Intensivos de Trauma y Emergencias (UCITE), Servicio de Medicina Intensiva, Hospital 12 de Octubre, Madrid, Spain

* Corresponding author.
E-mail address: rviejo@yahoo.es (R. Viejo-Moreno).

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Complications during intra-hospital transport of pediatric patient on extracorporeal membrane oxygenation☆

Complicaciones del traslado intrahospitalario del paciente pediátrico en oxigenación por membrana extracorpórea

During the clinical care of pediatric patients admitted to a pediatric intensive care unit (PICU), organ damage can be serious and lead to the implementation of more complex techniques such as extracorporeal membrane oxygenation (ECMO) support. ECMO is an extracorporeal life support technique that can be used in neonatal, pediatric or adult patients with heart and/or respiratory failure that is refractory to conventional medical support or to advanced ventilation strategies.[1] Added to the implementation of complex therapeutic techniques, we should also bear in mind that these critically ill children may require treatment at the hospital through diagnostic and/or therapeutic interventions, that is, procedures that are associated with clinical complications and more morbimortality for the patient.

Fully aware of this and since the Spanish medical literature is shorthanded on this regard, we reviewed the complications derived from the intra-hospital transfer of pediatric patients on ECMO and the initiatives taken in a tertiary care pediatric hospital from October 2013 to January 2018 after the implementation of a protocol on the management of intra-hospital transfers on ECMO back in October 2013 (Table 1). We gathered the clinical histories associated with age, the clinical diagnosis of the patient that triggered the use of ECMO, the type of support used (veno-venous or veno-arterial), the location of the cannulas (cervical, femoral or transthoracic), the factors affecting the transfer (reperfusion cannula or thoracic drainage), the appearance of transfer-related complications, the consequences to these complications, and the solutions proposed.

Thus, from October 2013 to April 2017 a total of 26 ECMOs were used on 24 patients with an average 8.1 days (1–15) on ECMO support. Out of all the ECMOs analyzed, there were 16 transfers in 12 of the 24 patients included in the study (2 of them were twice on ECMO support). Nine (9) of these 12 patients were males and 3 were females with a mean age of 60 months (1–132). Three (3) patients required 2 intra-hospital transfers each and the remaining 10 required only transfer one. Seven (7) of these patients were transferred to the cath. lab, 7 to the pediatric surgical block, and 2 to the radiology unit. All of them were on veno-arterial ECMO:

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Table 1 Equipment and personnel required for the intra-hospital transfer of patients on ECMO.

Personnel required for the transfer and functions	Equipment required for the transfer
Orderly: He should be in charge of the stretcher. Two nurses: One should be in charge of the cannulas and the other one should be in charge of monitorization. Pediatric intensivist: He should be stationed between the ECMO support cart and the stretcher to make sure that the entire team moves at the same time and that the circuit is not pulling the cannulas A 4th person (nurse or doctor): He will be pushing the ECMO support cart. A 5th person (nurse or doctor): Opening way.	Spinal board for the transfer of the child from the bed to the stretcher. Stretcher for the transfer. Screen and respirator during the transfer. Full oxygen tank. Ambu bag and mask adapted to the patient's age. Continuous infusion pumps with current-carrying cables. 4 protected clamps. ECMO support cart. Manual ECMO pump. Pediatric intensive care unit transfer bag with equipment and drugs. Sedation, relaxation, and cardiopulmonary resuscitation drugs.

10 patients due to cardiogenic shock (7 after cardiovascular surgery, 1 due to myocarditis, and 2 due to sepsis), 1 due to severe hypoxia and another one due to congenital tracheal hypoplasia. Two (2) patients were on central cannulation and the remaining ones, on peripheral cannulas: 8 patients were on exclusive cervical cannulation, and another 2 on cervical and femoral cannulas (one of them had a femoral artery reperfusion cannula). Five (5) patients were also on thoracic drainage and 2 of them remained with their chest opened. These were the complications seen: the coagulation of a femoral reperfusion cannula (that was changed after the PICU readmission), the pump accidentally stopped working because of a malfunctioning battery and the elevator had a breakdown that ended up changing the routine circuit without any repercussions for the patient. Due to all this, an alternative route for the intra-hospital transfer was proposed, a protocol was established for the thorough and routine check of the batteries, and the devices carried by the patient during PICU readmission were immediately checked.

It seems obvious that the transfer of patients on ECMO is a complex and risky procedure[2] due both to the patient's clinical severity and the great amount of devices that need to be mobilized together with the patient. Even so, the data on long-term survival with good quality of life in pediatric patients on ECMO suggest using this technique when conventional therapies fail.[3]

Heart disease is the most common cause for ECMO support and the cath. lab was one of the most sought after units following PICU transfers in our series of cases, which is consistent with other papers reviewed on this regard.[4,5]

A study conducted in Pittsburgh confirms that an experienced interdisciplinary team reduces the complications that appear during the intra-hospital transfer of patients on ECMO support.[4] While such center had no adverse events during the procedure, in our case, since we have been involved with intra-hospital transfers since 2013 only, we had 3 adverse events: the coagulation of one femoral reperfusion cannula, the accidental stoppage of the pump due to a malfunctioning battery, and an elevator breakdown. This ended up changing the initial transfer protocol including the need to go over a checklist to verify the correct functioning of all the necessary equipment.

Therefore, the benefits and drawbacks of ECMO support should be assessed prior to the intra-hospital transfer of pediatric patients on ECMO. If ECMO is decided, preparations are needed beforehand,[6] prior training of the personnel involved, and perfect coordination among all the members of the interdisciplinary team.[5] Therefore, we strongly believe in the implementation and update of specific protocols that make these transfers safe and effective while minimizing all possible risks.

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A. Bosch-Alcaraz*, S. Alcolea-Monge, M.C. Dominguez-Delso, M. Santaolalla-Bertolin, S. Segura-Matute

Unidad de Cuidados Intensivos Pediátricos, Hospital Sant Joan de Déu, Barcelona, Spain

* Corresponding author.
E-mail address: abosch@sjdhospitalbarcelona.org (A. Bosch-Alcaraz).

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