days of discharge, the patient was readmitted with complaints of uneasiness and palpitations. His ECG showed atrial flutter that was pharmacologically reverted. Trans-thoracic echocardiography revealed persistent left coronary cameral fistula draining into the LA. He was taken up for redo-closure of coronary cameral fistula on CPB. This case highlights the successful closure of the fistula and repeated echocardiographic evaluation and follow-up, so that we do not miss out a significant finding that is going to affect patient outcome.

A5 Venoarterial Extracorporeal Membrane Oxygenation for Amlodipine and Telmisartan Overdose—A Lifesaving Intervention

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A 28-year-old female patient came with a history of consumption of T. Amlodipine 5 mg (60 tablets) and T. Telmisartan 40 mg (30 tablets). The patient was in severe shock at the time of hospital admission. She was managed medically with stomach wash, fluid infusion, vasoconstrictors (Inj. adrenaline, Inj. noradrenaline, Inj. vasopressin, and Inj. phenylephrine at high doses), Inj. calcium gluconate, Inj. glucagon, lipid emulsion, and hyperinsulinemia euglycemia therapy. However, she was in severe metabolic acidosis with refractory shock and severe vasoplegic syndrome in spite of aggressive medical management. Venoarterial extracorporeal membrane oxygenation (VA-ECMO) was initiated for this patient. After 5 days, she was successfully weaned from VA-ECMO and discharged from the hospital. We present the significance of VA-ECMO in cardiotoxic drug overdose.

A6 Extracorporeal Membrane Oxygenation in the Tropical World: Disease-Specific Solutions and Challenges

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Extracorporeal membrane oxygenation (ECMO) in the tropical world has been dominated by acute respiratory distress syndrome (ARDS) due to viral and bacterial pneumonias and a multitude of other regional problems as well. Extracorporeal life support (ECLS) is useful in providing organ support for reversible cardiopulmonary bypass or related causes. Bacteria and viruses tend to be prevalent and variable across both the worlds. Vector-related illnesses are also predominant. Malarial parasite, typhus-related diseases, tuberculosis, and dengue fever are some of the most important

causes. In the temperate climate zones, many familiar viral and bacterial diseases spread from person to person, and more so because of the population density. The effect of the illnesses can also vary greatly reflecting the herd immunity status of the community.

Some of the important problems of the tropical world for the ECLS community:

Vector-borne diseases	ARDS	Malaria	Mosquito
		Typhus diseases: <i>Rickettsia</i>	
		Epidemic typhus: <i>Rickettsia prowazekii</i>	Louse-borne typhus
		Endemic typhus: <i>Rickettsia typhi</i>	Rat flea or cat flea
		Scrub typhus (<i>Orientia tsutsugamushi</i>)	Mite
		Dengue	
Zoonosis	ARDS	Anthrax <i>Bacillus anthracis</i>	Inhalation of spores
		Leptospirosis (<i>Leptospira ictero hemorrhagica</i>)	Rodents
		Plague	Rodents
Air borne		Tuberculosis	
		H1N1	
		MERS virus	
Contact with body fluids		Ebola	
Contamination		Infections (multidrug resistant)	

Noninfectious causes:

Poisonings	E.g.: Celphos	ARDS, multiorgan failure
	Organo phosphorous	ARDS, multiorgan failure
Snake bite		ARDS, vasodilatory shock
Scorpion sting		Myocarditis, shock
Burns		ARDS
Pancreatitis		ARDS, shock
Trauma		ARDS, shock

Outbreaks usually only occur in developing countries or in regions of poverty, poor sanitation, and close human contact. Though these diseases are being described as tropical, they are universal. Their numbers might vary.

Today, the world is like a global village. Infections originated in one part of the world can easily spread to the

rest of the world if there is any break in the chain of screening the affected in the incubation period.

Current reported experience is discussed.

A7 Initiating an Adult and Pediatric Extracorporeal Membrane Oxygenation Program in a Developing Country: Challenges, Successes, Opportunities, and Road Ahead

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In developing countries, there are a growing number of patients with complex heart and lung disease (both adults and pediatric population) that is coupled with an environment of scarce resources. There is, therefore, a huge need for the adoption of modern medical technology in the field of mechanical circulatory systems, including extracorporeal membrane oxygenation (ECMO) treatments. The development of ECMO in particular has been extremely slow, and no system is currently approved and available for clinical application in developing countries, such as Pakistan. Reasons include financial constraints that have been a barrier to the development of robust adult and pediatric cardiac intensive care units critical to the success of such programs. Second, because of substantial resource limitations, the existing models of such care cannot be applied in their existing forms without addressing the numerous challenges that limit the delivery of ECMO in the developing world. Other limitations include absence of skilled technologists and material resources for adapting such technologies. Additionally, there is need to adopt strategies for delivering to the patients and health care providers such technologies at affordable costs. Here, we present a framework for the establishment of a new ECMO program in a resource-limited environment typically encountered in the developing world and the emerging economies.

A8 Management of Hemopneumothorax on Venoarterial Extracorporeal Membrane Oxygenation in a Patient with Acute Viral Pneumonia, Kyphoscoliosis, and Hypothyroidism

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Introduction: Extracorporeal membrane oxygenation (ECMO) is becoming an important therapeutic option for patients with severe acute respiratory distress syndrome (ARDS). Pneumothorax is a known complication of mechanical ventilator strategy in ARDS. Anticoagulation given during ECMO increases the chance of uncontrolled bleeding. We report management of hemopneumothorax in a patient with kyphoscoliosis, hypothyroidism, and acute viral pneumonia in a patient with severe ARDS who was on ECMO support.

Case Report: We report a 55-year-old woman, a known case of kyphoscoliosis and primary hypothyroidism received with refractory hypoxemia. The patient was immediately intubated and put on mechanical ventilation. In view of high fraction of inspired oxygen (FiO_2) requirement (severe ARDS) on ventilator, prone positioning was done. Due to high positive end-expiratory pressure (PEEP), she developed sight-sided pneumothorax leading to implantable cardioverter-defibrillator (ICD) insertion. Still she was not maintaining peripheral capillary oxygen saturation (SpO_2), and chest X-ray (CXR) worsened. She was put on ECMO. During ECMO, she developed bleed from ICD site. Local site adrenaline infiltration was done. Massive blood transfusion was done (13 units in 24 hours). Target activated clotting time (ACT) level was kept on lower side and bleeding stopped. CXR revealed right hemothorax (clots). Till seventh day of ECMO, the patient did not show any improvement, so thoracotomy was done on ECMO and clots were retrieved. Postthoracotomy CXR revealed lung expansion. Following this, the patient had massive bleed for which massive blood transfusion (packed red blood cell [RBC], random donor platelets [RDP], single donor platelets [SDP], cryoprecipitate, fresh frozen plasma [FFP]) was done. On 01/11/17 (eighth day), the patient was weaned off from ECMO. Post ECMO, her FiO_2 requirement was 65%. Computed tomographic (CT) scan of her chest revealed bilateral diffuse ground-glass opacities with septal thickening, and her bleeding stopped. In next 3 days, her FiO_2 requirement was increased so she was started on steroid and diuretics, and antibiotics were escalated. The patient's condition did not improve, and she was discharged against medical advice.

Conclusion: Management of hemopneumothorax on ECMO is a very challenging task due to anticoagulation. Massive bleeding needs blood transfusion, targeting low ACT during ECMO. Surgical exploration on ECMO is also challenging, but with careful planning, surgery can be managed well.

A9 Venoarterial Extracorporeal Membrane Oxygenation in Case of Drug-Induced Stress Cardiomyopathy—A Lifesaving Intervention

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