Rethinking Acute Dialysis Strategies in Major Disasters: New Perspectives and Future Directions Suggested by the Haitian Earthquake

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Major injuries have occurred within the Haitian population as a consequence of the recent earthquake, and specific questions regarding kidney care have appeared. Namely, how best to treat chronic patients in a large disaster area where dialysis centers have been destroyed, and how to treat the large amount of patients presenting with crush syndrome and acute kidney injury. Besides the difficulties in early medical evacuation procedures, an increased demand for dialysis services is now being faced. Some kidney medical teams from various organizations have entered Haiti carrying light material (e.g. Kayexalate, dialysis catheters) in their hand luggage; however, limitations in the transportation infrastructure have led to problems with heavy equipment (e.g. dialysis machines) reaching Port-au-Prince. Existing dialysis centers face problems such as the safety of the building and the lack of electricity, water and disposable supplies. Although structural chaos conjoined with a disaster of unseen dimensions makes progress extremely difficult, the International Society of Nephrology (ISN) Renal Disaster Relief Task Force was activated immediately, with the aim of providing the same high-quality care seen in previous disasters. All these acts of support may save a substantial number of lives, but we must also prepare for the future. In the past, we proposed creating self-standing portable dialysis centers inside transportable containers

(fig. 1). These centers were conceived to be self-sufficient in terms of power, water and supplies. They could be parachuted or deposited in disaster areas with helicopters, and would represent a 'portion' of a field hospital not requiring additional structures. This approach may represent an important possibility for renal replacement therapy implementation directly in the disaster area, without placing further demands on logistics and supplies. Such a self-sufficient container should be kept in use as a satellite unit of chronic hospital units in order to train personnel and keep it 100% operative in routine times. When an emergency occurs, this unit can be taken to the disaster area and begin to function immediately, with no delays or necessary preliminary testing. More recently, experiments on portable and wearable dialysis systems have demonstrated their feasibility, making the structure of a hospital center less necessary and making it possible to treat injured patients with a sort of continuous renal replacement therapy [1, 2]. This approach might become an important option to expand the range of treatment possibilities in the field. A portable device for hemodialysis might be applied to the patient in the field and during difficult evacuation procedures. Sometimes, there is a gap of 24–48 h between the injury and taking the patient to a better equipped center or a relatively quiet area where emergency treatments can be applied.

Fig. 1. Portable dialysis center inside a transportable container.

While we commend the important contributions of voluntary associations, the ISN disaster relief task force and military organizations deployed for humanitarian purposes, we feel obliged to strongly encourage the international community to stimulate research in transportable and wearable dialysis technologies in order to be prepared for future disasters and to create the conditions for adequate renal replacement strategies in remote areas under complicated logistical conditions.

References

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