ABSTRACT

Extracorporeal Treatments in Poisoned Patients

Hemodialysis was created as temporizing measure in patients with acute recoverable conditions, and as such poisoned patients were among the first patients treated with primitive dialysis techniques. It took many years until stable vascular access was developed before hemodialysis (HD) was considered a standard therapy in patients with chronic kidney disease. Over the years many other extracorporeal techniques such as peritoneal dialysis (PD), hemoperfusion (HP), therapeutic plasma exchange (TPE) and albumin dialysis (proprietary methods such as MARS) have found indications in general medicine. With the common use of hemodialysis in medicine, it was rapidly applied to a variety of common on uncommon poisonings without every being subjected to rigorous controlled trials. Critical questions about dialyzability were never studied. We now recognize that in order for a toxin to be removed by hemodialysis it must have: 1) a small molecular weight (usually <500-1000 Daltons), 2) low protein binding, and 3) a low volume of distribution (usually < 1 L/kg).(1) Different modalities can overcome some of these limitations. For example, TPE is not limited by protein binding or molecular mass and HP is not limited by protein binding. However, these techniques trade higher complication rates and poor efficiency for these advantages so are almost never used. In addition, simple removal is different from efficacy which requires considerations of cost, safety, and clinical outcome. Efficacy is often limited by endogenous clearance, which when present is far more efficient than extracorporeal techniques. Currently in many countries the most common indications for extracorporeal elimination are lithium, salicylates, methanol, and ethylene glycol.(2) Although many other poisoned patients receive extracorporeal therapy, treatment is often for a complication of poisoning (acute kidney injury) rather than poison removal.(3) The **Ex**tracorporeal **Tr**eatments **i**n **P**oisoning (EXTRIP) workgroup is an international multidisciplinary team who goal is to provide recommendations on the use of extracorporeal treatments in poisoned patients. The workgroup uses a transparent evidence-based method to review the data and establish consensus recommendations.(4) Details about the workgoup and its first recommendations found at: https://www.extrip-workgroup.org/ Newer recommendations are appearing in peered reviewed literature as quickly as they can be finalized. This lecture will discuss some of these recommendations in more depth.

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血液透析的發明是作為急性可恢復性患者的臨時措施。因此，中毒的患者是最早接受原始透析技術治療的患者之一。在血液透析（HD）被認為是慢性腎臟疾病患者的標準療法之前，花了很多年才開發出穩定的血管通路。多年來，許多其他體外治療技術，如腹膜透析(PD)、血液灌流(HP)、血漿置換術(TPE)和白蛋白透析（如MARS等專有方法）已在醫學上各有其適應症。隨著血液透析在醫學上的普遍使用，它迅速應用於各種常見或罕見中毒病患，卻沒有經過嚴格的對照試驗，從未研究過有關可透析性的關鍵問題。我們現在認知，要透過血液透析去除毒素，它必須具有：1）小分子量（通常<500-1000道爾頓）2)低蛋白質結合率，和3)低分布體積（通常<1 L/kg）。（1）不同的透析方式可以克服其中一些限制。例如，TPE不受蛋白質結合率或分子量的限制，HP也不受蛋白質結合率的限制。然而，這些技術的優勢換來的是更高的併發症發生率和低治療效力，因此幾乎從未使用。此外，簡單的移除與需要考慮成本、安全性和臨床結果的療效不同。療效往往受到內源性清除率的限制，當內源性清除率存在時，其效率遠遠高於體外技術。目前在許多國家，最常見的體外排除的適應症是鋰鹽、水楊酸鹽、甲醇和乙二醇。（2）雖然許多其他中毒患者接受體外治療，但通常是治療中毒併發症（急性腎損傷），而不是移除毒素。（3）Extracorporeal Treatments in Poisoning（EXTRIP）工作小組是一個國際多學科團隊，其目標是就中毒患者使用體外治療提供建議。工作小組使用透明的實證方法審查數據並建立具共識的建議。（4）工作小組相關細節及其首次建議詳情如下：https://www.extrip-workgroup.org/ 最新的建議會盡量與文獻出刊速度一致。這次演講將更深入地討論這些建議。