

Professor Dr. med. Klaus F. Kopp

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Prevention and Early Rescue Treatment of Acute Renal Failure (ARF). Guidelines and Clinical Practice How to Induce Bicarbonate-Alkaline-Polyuria (BAP)

K.F.Kopp¹, B. Blasberg¹, D. Lücke¹, F. Grubhofer¹, E. Nirschl¹, H.V. Gärtner², J. Mason³

¹Klinikum r.d.Isar TU München, ²Universität Tübingen and ³New Jersey

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ARF is a life threatening illness with a high mortality in spite of the introduction of hemodialysis more than 25 years ago. This paper describes how to avoid artificial blood purification and how to prevent or treat the occurrence of ARF. Clinical experience was gained over the last 20 years from cases with preexisting renal insufficiency, age over 60, diabetics, systemic diseases, one functional kidney, severe electrolyte-fluid-acidbase disorders, cardio-pulmonary failures, sepsis, endogenous, exogenous intoxications, drug overdoses, cytotoxic drugs, NSAIDs, radiocontrast media, pre-peri-post major surgical or medical interventions. More than 300 cases with serum creatinines up to 10 mg/dl have been studied in clinical trials. Meanwhile the BAP method is used routinely in our center. Two own experimental animal studies on a gentamycin-toxic and an ischemic rat model have recently confirmed the clinical results. BAP is induced by raising the plasma bicarbonate concentration to about 28 mM/L \approx 7 mM/L target-BE, either using 1 g NaHCO₃, tablets orally or I.V.-infusion of 1-molar NaHCO₃ via C.V.-Catheter. Target-urine-pH is \geq 7. Subsequently the additional i.v.-administration of a loop diuretic is necessary in order to induce the target alkaline polyuria of 2500 to 3000 ml/24 h or more for a 70 to 80 kg patient. Dosage: 40 mg furosemide x mg/dl serum-creatinine. The identical diuretic dose per day (i.v. via infusion pump) and a balanced NaHCO₃, fluid, electrolyte supplementation is mandatory to maintain BAP until recovery. Urgent I.V.-rescue-BAP induction in critically ill ARF-patients requires intensive care monitoring in order to circumvent possible contraindications for BAP.

Plasma creatinine decreases daily by 1 to 2 mg/dl as well as other uremic retention products. Fluid balance is easily kept optimal. The unique properties of the enhanced filtrate NaHCO₃-solute flow provide an afferent vasodilating GTB-feedback signal which increases GFR, the blood supply and the oxygenation of the nephron whereby BAP is curative to repair the initial insult. All 300 study cases recovered without the need of dialysis.

Conclusion: In our center, dialysis of ARF is limited for cases of belated referral or where BAP was omitted. We consider BAB as a breakthrough in the conservative management of ARF. BAP avoids extracorporeal procedures and the associated morbidity and mortality of ARF.

