Journal of Kidney
ISSN: 2472-1220

Ryzlewicz, J Kidney 2016, 2:2
DOI: 10.4172/2472-1220.1000e106

Editorial Open Access

Sharpened: Dialysis Fluid

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Editorial

Once upon a time in Tassin (South France), there had worked two very qualified Nephrologists. They both had tremendous success in long-term treatment of CKD-5 patients due to their dialysis regime (24 hours of treatment per week and strong limitation of salt (2 g per day by fresh cocking). This has well known as The Secrets of Tassin (Charra and Laurent). Nearly not known was the kind of dialysis fluid: They used for this tremendous success the acetate prescription of Shaldon without any calcification at all of this fluid. Tassin had used this set-up in a very intelligent way: Only a dialyzer clearance in a medium range that never had overrun the metabolic capacity of the liver in order to transform the full amount of the buffer precursor Acetate into bicarbonate and CO_2. That is why they reached theses very long treatment times up to 40 years.

The majority of dialysis centres had shortened the treatment time of dialysis in the longrun and enlarged the dialyzer clearance, so that the metabolic capacity of the liver had overrun. These side effects opened the door to the bicarbonate dialysis fluid in 1978. With this bicarbonate dialysis fluid, the calcification had introduced as a contribution to the patient's calcification (especially of coronary vessels and heart valves). Because of this calcifying dialysis fluid, the monitor must descaled after each treatment. The patient never can descaled . . .

First problem

When reached an approval of the Authorities (FDA Dep. Medical Products (US) or BfArM Institute (Germany)), than there is no vigilance at all, as dialysis concentrate is a Medical Product. Second problem: The Chemical Solubility could not assessed by the Medical Societies, as these had casted with medical doctors. The assessment of a Chemical Solubility Problem requires detailed Chemical knowledge (!).

Prime is, when the worldwide use of Acidification with 3 mmol/l does continue. So the Medical Societies will continue to mourn concerning the patient's calcification of coronary vessels and heart valves with the known results in morbidity and mortality. The Authorities will continue in the same way the neglecting of the vigilance of a Medical Product.

Option is the use of bicarbonate dialysis fluid with acidification with 1 mmol/l Citrate. As this corresponds to 3 mval/l Citrate, the amount of Acidification (= production of the amount of CO_2 gas) is the same like done with 3 mmol/l Acetate. But Citrate has inside a second principle of working, the Chelate binding. This chelate binding of Citrate disguises the important ions for the calcification (Ca^{++} and Mg^{++}). So the both problematic ions were present in the concentration of bicarbonate dialysis fluid, but they were impeded to fall out by the chelate binding of Citrate.

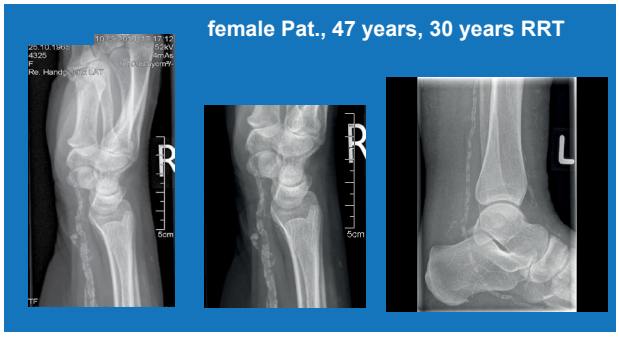

Figure 1: Calcification of peripheral arteries.

Conclusion

As the Authorities did not fulfil their real duty (>vigilance of a Medical Product) and the Medical Societies cannot handle this problem of Chemical Solubility of the dialysis fluid, the interested single doctor is asked to make an undercut by using the acidification with 1 mmol/l Citrate. With this set-up, the contribution of bicarbonate dialysis fluid to the patient's calcification will full eliminated, as the prescription himself does not calcify. Dialysis concentrates are approved Medical Products, available on the market. When going this way, the single patient has the full benefit, as the contribution of calcification by the dialysis fluid will eliminated.

A JPEG of an X-Ray of a long-term RRT patient of 50 years (33 years of RRT with 2 kidney transplants in state of CKD-4), who is in very good condition and never had smoked, shows the severe peripheral vessel calcification (Figure 1).

Today she has no clinical perfusion problems, neither at the legs nor at the arms (>whenever she had lost the left Arteria radialis by an end-to-end Cimino fistula). You can imagine the coronary vessels and heart valves of her. Here we have no JPEG, as there was no clinical reason for this. A last remark: This patient (a "Professional Patient" because of 33 years of RRT) asked her home clinic to switch to Citrate acidification because of THIS severe vessel calcification. This theme had fully not understood. Switching to Citrate acidification had refused by her home clinic, a Dialysis Centre conducted by a Professor of an University . . . - This is the problem!

I am not involved with any concentrate producing company. There is no refunding advantage for me.

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Received April 18, 2016; **Accepted** April 24, 2016; **Published** April 28, 2016

Citation: Ryzlewicz T (2016) Sharpened: Dialysis Fluid. J Kidney 2: e106. doi:10.4172/2472-1220.1000e106