



LETTER TO EDITOR

Chemo-port occlusion due to calcium phosphate crystals: A case report



To the editor,

Thank you for giving me the opportunity to submission to the letter to editor of this journal. Occlusion of the chemo-port catheter is a major problem in patients with cancer. Performing additional interventions to solve occlusion of the chemo-port catheter, such as removal or insertion of chemo-port in cancer patients, causes suffering and discomfort for cancer patients. However, there is a lack of research on how to treat chemo-port occlusion that is not caused by thrombosis without additional intervention in adults.

Occlusion of the chemo-port catheter is defined as partial or complete obstruction of the central venous access device limiting or preventing the ability to withdraw blood, flush the catheter, or administer parenteral solutions or medications.¹ It is classified into mechanical, medication or parenteral nutrition-related, and thrombotic occlusion. Occlusion due to thrombosis, the commonest cause, can be rescued by thrombolytic therapy. However, catheters occluded by calcium phosphate crystal are usually removed early.^{2,3}

In our case, the chemo-port was blocked with no regurgitation and no flushing in use. We removed chemo-port as our protocol and inserted a new chemo-port on the other side. The components of catheter occlusion were

analyzed by electron probe microanalysis (EPMA) using JXA-8530F (JEOL, MA, USA). The main components of the crystals were calcium, phosphorus, and oxygen (Table 1).

Occlusion due to thrombosis and crystal deposition can be distinguished clinically. Thrombosis usually occurs over a few days. While it improves with flushing, aspiration is impossible. Calcium phosphate crystals deposition generally occurs in a day over one infusion cycle of total parenteral nutrition containing incompatible calcium and phosphate concentrations, and manifests as a progressive resistance to infusion.⁴ In our case, the occlusion occurred on day 10 of hospitalization, after administering several electrolytes simultaneously.

Walser recommends removing a completely occluded chemo-port.⁵ Hence, we removed the catheter and identified that the occlusion was caused by crystals. In infants and children, obstructions caused by calcium phosphate crystals that become insoluble in basic solutions can be treated with 0.1% hydrochloric acid.¹ As there are no similar cases reported among adults, we did not attempt using 0.1% hydrochloric acid. Two weeks after its removal, the patient required another chemo-port.

Identifying the exact cause for the occlusion and appropriately treating it, by evaluating its characteristics and the medication and parenteral nutrition administered

Table 1 The components analysis results of electron probe microanalysis.

Point	O (Mass%)	P (Mass%)	Ca (Mass%)	Total (Mass%)	O (Atomic weight)	P (Atomic weight)	Ca (Atomic weight)	Total (Atomic weight)
1	38.66	17.24	26.49	82.38	66.50	15.32	18.19	100.00
2	23.57	7.68	11.39	42.64	73.46	12.37	14.18	100.00
3	38.32	14.48	19.51	72.31	71.51	13.96	14.53	100.00
4	20.53	8.59	13.57	42.69	67.57	14.60	17.83	100.00
5	10.09	6.00	10.60	26.69	57.91	17.80	24.29	100.00
6	18.03	9.56	15.02	42.61	62.25	17.05	20.70	100.00

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is important. Clearing the occluded catheter with 0.1% hydrochloric acid could be more beneficial and cost-effective than replacement. As studies in adults are lacking, this requires further studies.

Conflict of interest

The authors have no financial conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.asjsur.2019.01.005>.

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