Comparison of Treatment Alternatives for Hypercalcemia due to Vitamin D Intoxication in Children

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Background and Aim

No large study comparing efficiencies of prednisolone, alendronate, and pamidronate has been conducted so far in children with hypercalcemia due to vitamin D intoxication.

We aimed to perform a multicenter, retrospective study assessing clinical characteristics and treatment results.

Methods

Data of children with hypercalcemia (serum calcium, >10.5 mg/dL) due to vitamin D intoxication (serum 25 OH vitamin D, >150 ng/mL) was collected via an online national database system (www.favorsci.org). Patients were designated into groups according to the treatment type in the first 48 hours.

Results

74 patients between 2002-2014
45 males (60.8%)
Mean age, 1.4±1.3 yrs (range, 0.04 – 7.4 yrs)

Figure 1. Centers participated in the study

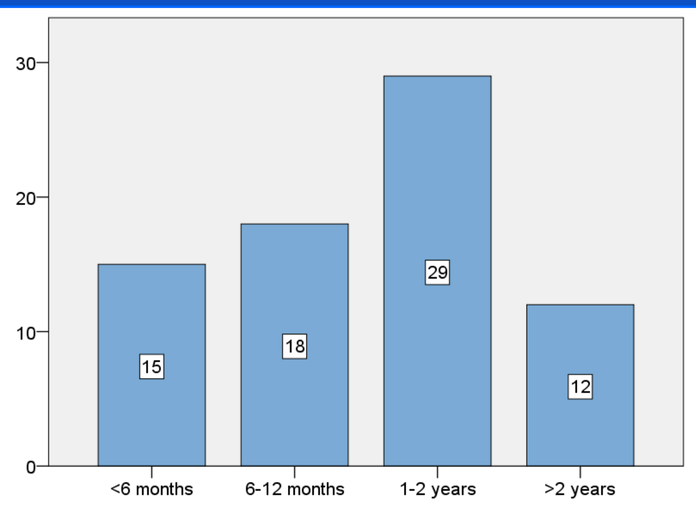


Figure 2. Age groups of the patients

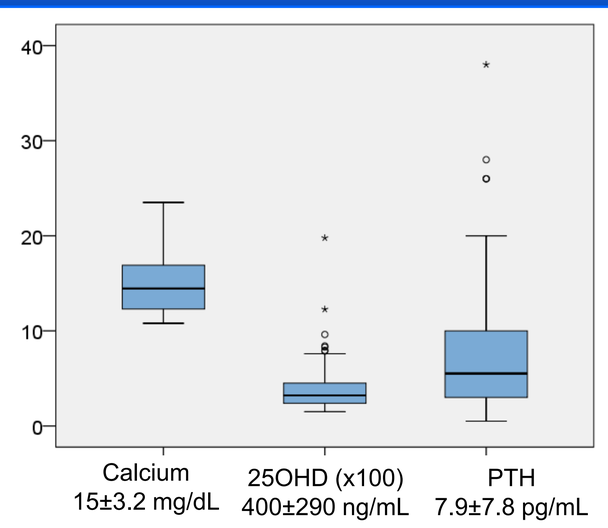


Figure 3. Mean values of 74 patients

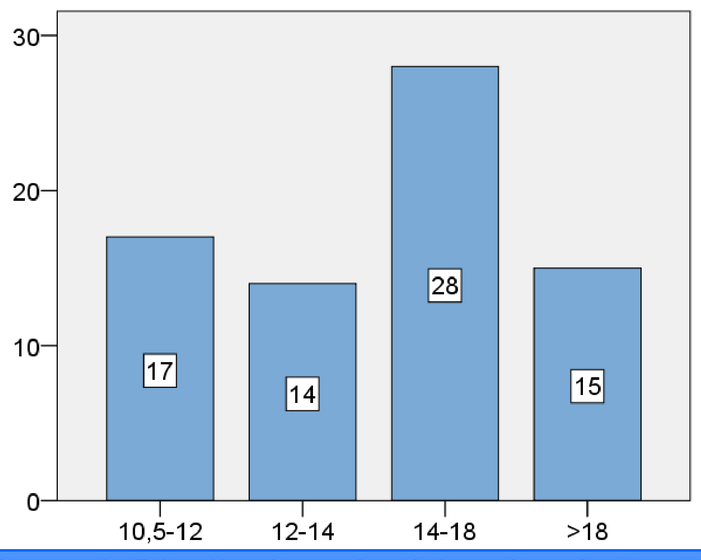


Figure 4. Distribution of calcium levels (mg/dL)

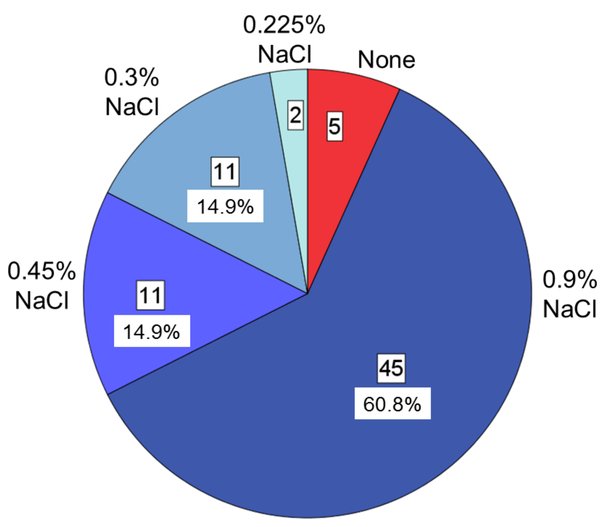


Figure 5. Distribution of hydration fluids

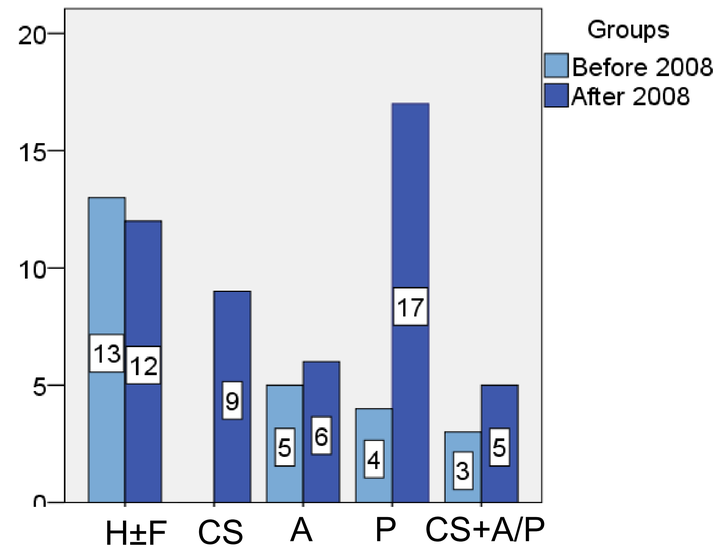
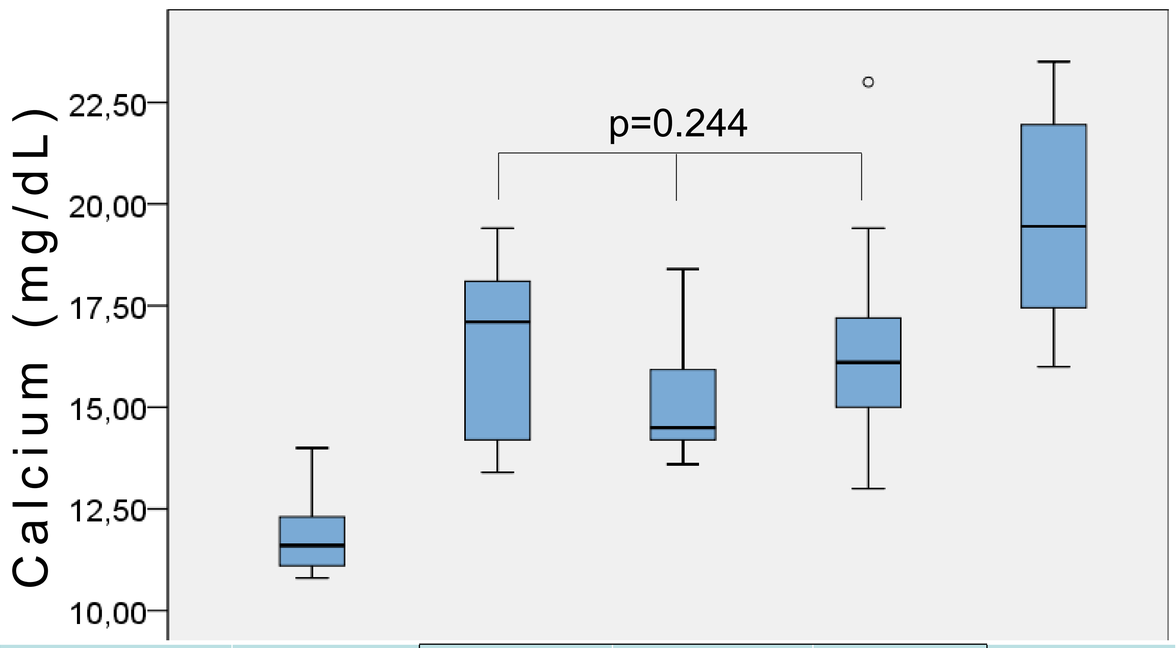


Figure 6. Initial treatment preferences



	H±F (n=25)	CS[a] (n=9)	A (n=11)	P[b] (n=21)	CS+ A/P (n=8)
Calcium (mg/dL)	11.6 (11.1-12.4)	17.1 (14.2-18.8)	14.5 (14.2–16.8)	16.1 (14.8-17.6)	19.5 (17–22)
25OHD (ng/mL)	253 (188–320)	257 (160–760)	348 (240 -422)	466 (330–725)	323 (250–446)
Days to Ca <10.5 mg/dL	3 (2-4.5)	6 (3.5-11.5)#	5 (4-12)#	4 (3-6)#	6.3 (4-11)
Recurrence	0 (0%)*	2 (25%)*	3 (30%)*,£	0 (0%)*,£	1 (12.5%)

H, hydration; F, furosemide; CS, steroids; A, alendronate; P, pamidronate; **a**, 1 patient received pamidronate and calcitonin, 2 pamidronate, 3 calcitonin; **b**, 1 patient received steroid; #, p=0.099; *Data are lacking for 1 case in each & p=0.02; £, p=0.03

Figure 7. Comparison of treatment alternatives

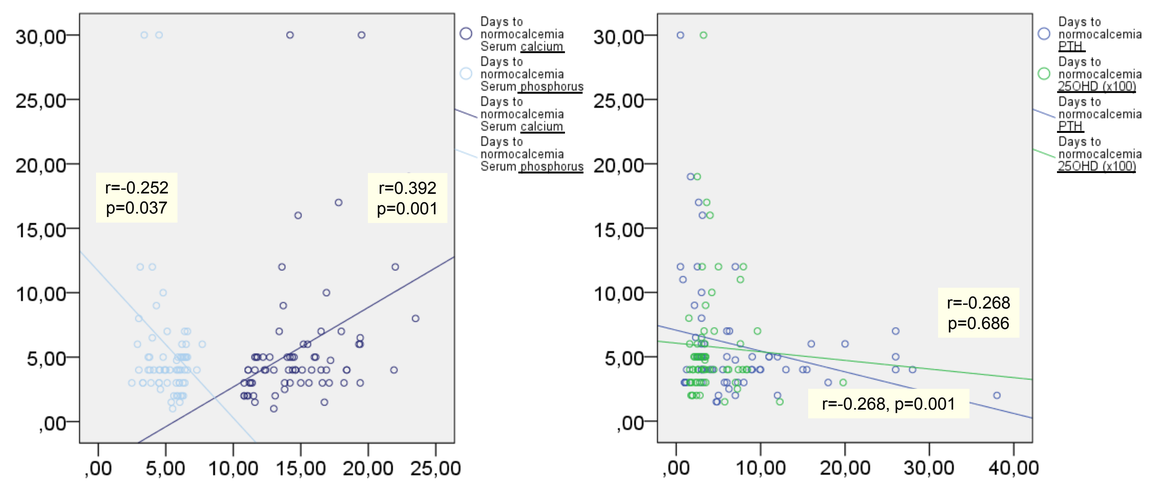


Figure 8. Correlates with time to normocalcemia

Conclusion

Some of the patients given only prednisolone require additional interventions (namely, pamidronate and calcitonin) to restore normocalcemia as rapid as alendronate or pamidronate.

Pamidronate use results in a lower recurrence rate compared with alendronate.

In severe hypercalcemia, physicians tended to start combination of treatments thus no comparison could be done.

References: 1. Mogiatzi MG et al. Vitamin D supplementation and risk of toxicity in pediatrics: a review of current literature. J Clin Endocrinol Metab 2014; 99:1132-1141. 2. Sezer RG et al. Comparison of oral alendronate versus prednisolone in treatment of infants with vitamin D intoxication. Acta Paediatr 2012; 101:e122-e125.

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