

Serum PTH does not correlate with their serum calcium levels in some children and adolescents with Hashimoto thyroiditis

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Background: Hashimoto thyroiditis (HT) is characterized by autoimmune-mediated destruction of the thyroid gland. Ca metabolism disturbance due to hypoparathyroidism among HT patients remains to be clarified.

Objective: To clarify the relationship between HT and primary hypoparathyroidism.

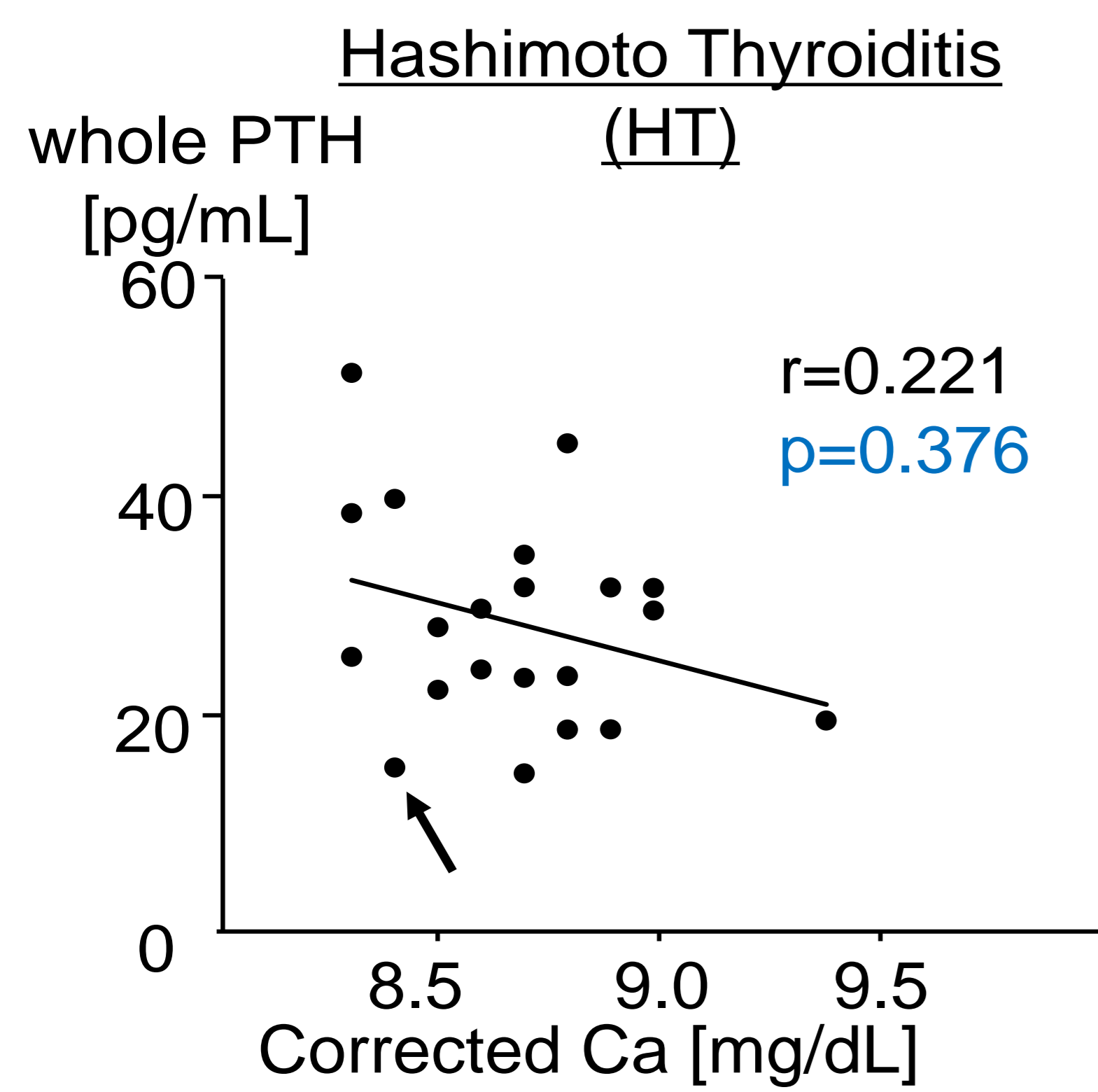
Patients and Methods: Serum levels of Ca, albumin, and whole PTH (wPTH, ECLIA) were measured in 21 patients with HT and 31 type 1 diabetes patients with normal thyroid function as a control group. Pearson's correlation coefficient was calculated for wPTH and albumin-corrected Ca value.

Results

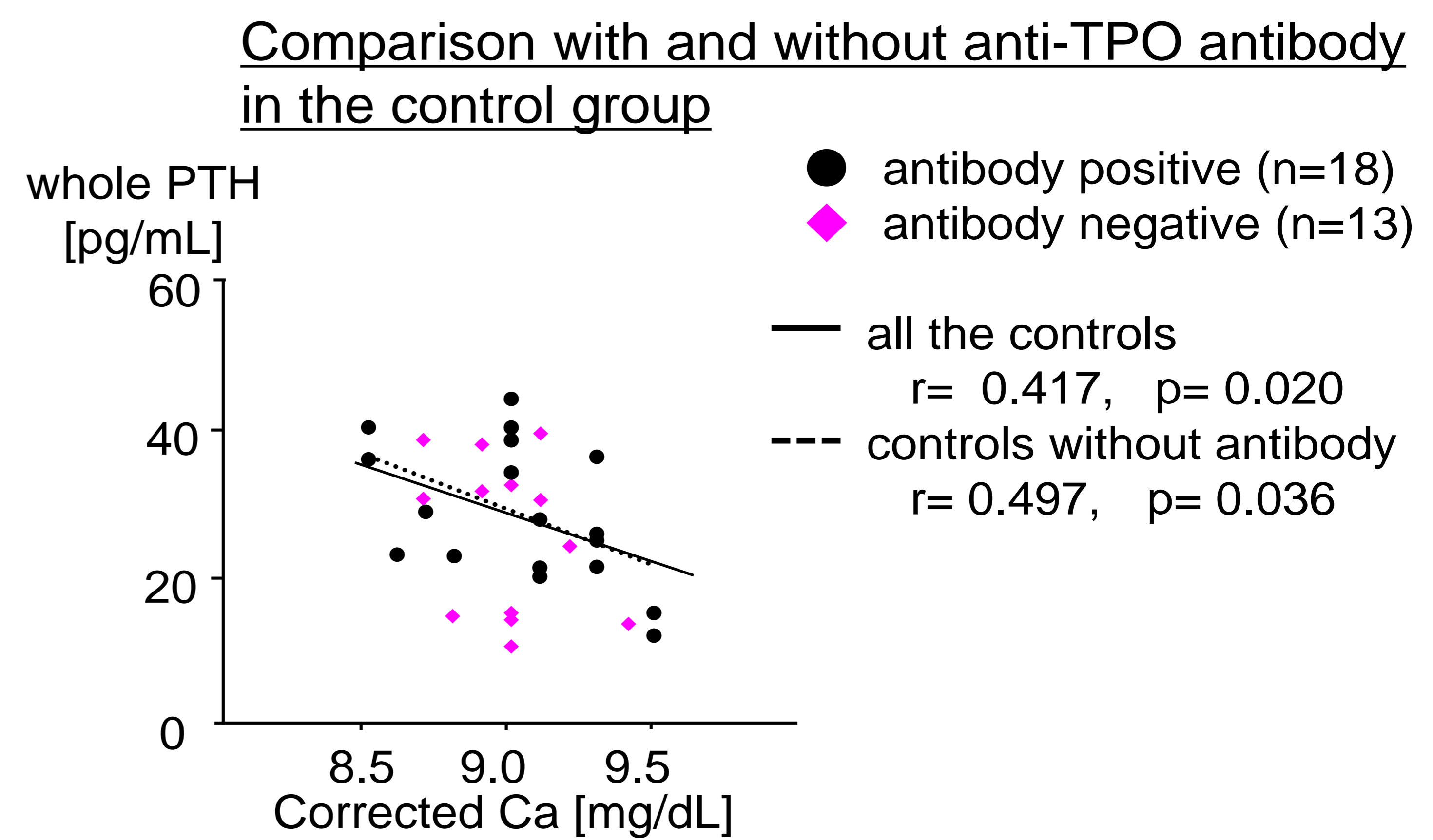
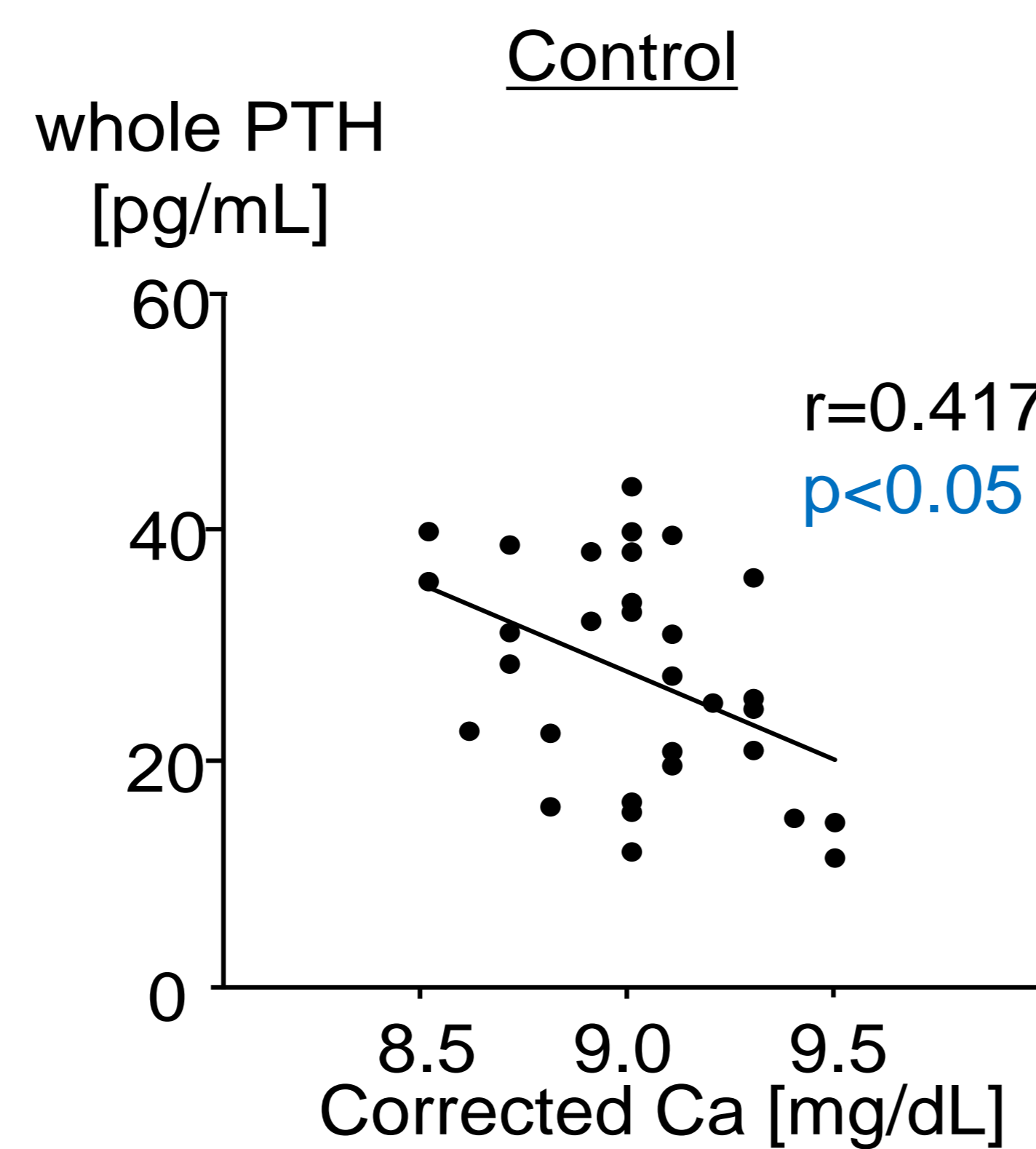
1. Characteristics of patients

	Hashimoto Thyroiditis (n=21)	Control (n=31)	
Sex (Male / Female)	2 / 19	8 / 23	
Mean age at examination [year]	13.4 (10-19)	15.7 (8-23)	
Mean age of Onset [year]	9.9 (2-14)	-	
Disease Duration [month]	49.9 (3-112)	-	
Mean wPTH [pg/mL]	28.39 (14.85-50.93)	27.18 (11.43-43.52)	$p = 0.85$
Mean corrected Ca [mg/dL]	8.7 (8.5-9.8)	9.0 (8.5-9.5)	$p = 0.07$
TSH [μ IU/mL]	2.04 (0.76-1.79)	-	
free T ₄ [ng/dL]	1.35 (0.39-3.41)	-	

2. Correlation between Ca and wPTH



Significant correlation was NOT found between wPTH and serum Ca in HT patients.



Controls without antibodies showed higher correlation.

Discussion

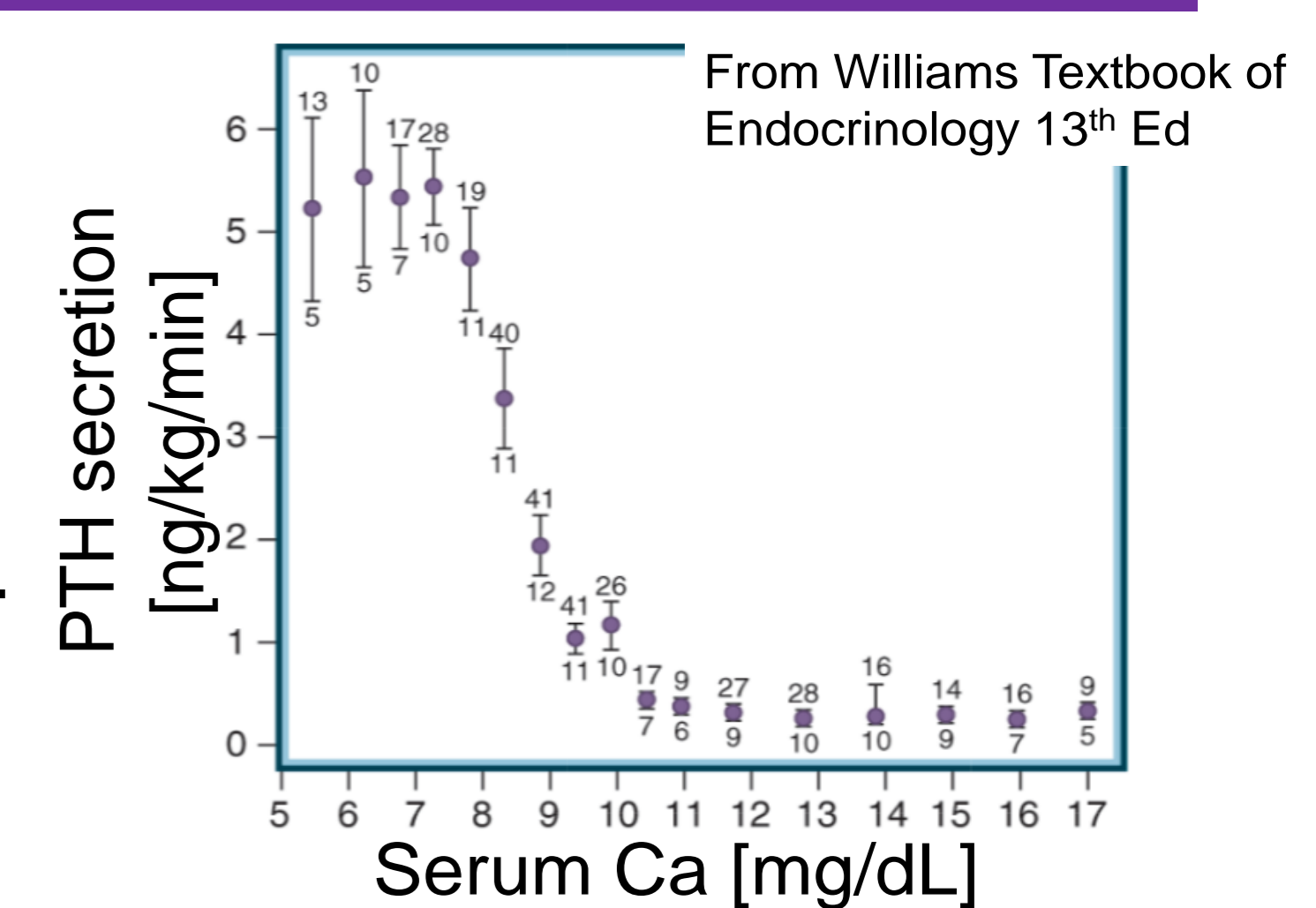
Serum PTH is strictly controlled by ionized Ca levels. (→)

In this study, no correlation was found between PTH and serum Ca in patients with HT, which would indicate that

1) PTH secretion is abnormal in some HT patients.

Indeed, serum PTH was inappropriately low in one patient. (See below "Clinical Presentation")

2) Positive thyroid autoantibodies reflect the autoimmune abnormal state which causes a decrease in PTH secretion.



<Clinical Presentation>

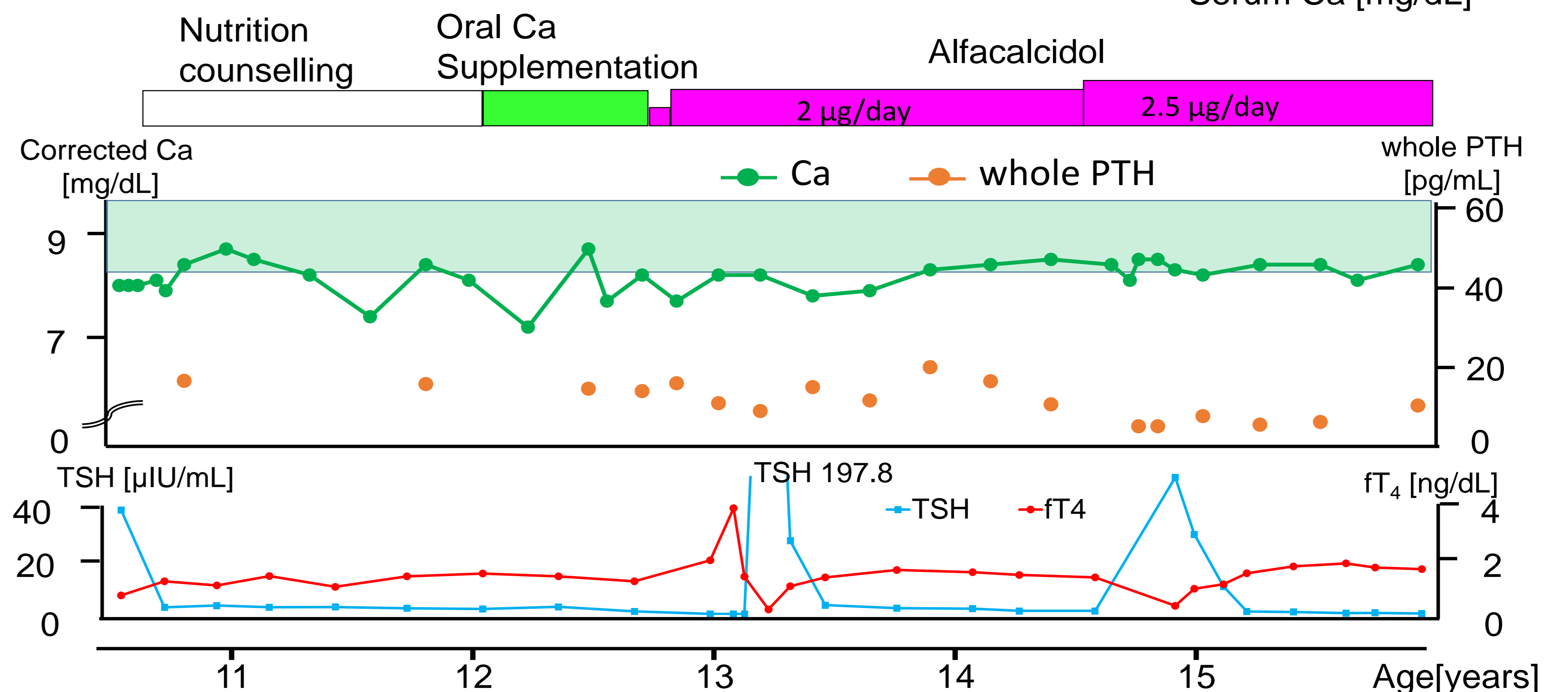
A 10-year-old girl presented with diffuse thyroid enlargement, general malaise and constipation.

Blood examinations revealed HT (TSH 140.22 μ IU/mL, fT₄ 0.4 ng/dL, TgAb 1287 IU/mL, TPO Ab >1500 IU/mL), which required levothyroxine treatment.

She presented hypocalcemia at diagnosis, which was not improved with nutritional counselling, and oral calcium supplementation.

She developed hypoparathyroidism with limb numbness (Ca 8.2 mg/dL, ALP 700 U/L, wPTH 13.0 pg/mL, 1.25-OH VitD 61.4 pg/mL.)

We started and gradually increased alfacalcidol, by which serum Ca was successfully controlled.



Conclusion

We showed that some patients with HT might develop symptomatic hypoparathyroidism.

It would be worth noting that hypocalcemia might be seen during the course of chronic thyroiditis.