

Effects of Preoperative Cinacalcet Hydrochloride (CH) Treatment on Operative Course of Parathyroidectomy (PTx) and Pathological Changes of Resected Parathyroid Glands (PTGs)

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【Background】

Secondary hyperparathyroidism (SHPT) is associated with higher cardiovascular morbidity and mortality among dialysis population. CH, which has been clinically available in Japan since 2008, reduce PTH levels effectively even in patients with severe SHPT refractory to active vitamin D treatment. However, parathyroidectomy (PTx) is also performed in patients with severe SHPT refractory to CH.

In this study, we investigated effects of preoperative CH treatment on operative course of PTx and pathological findings of resected PTG.

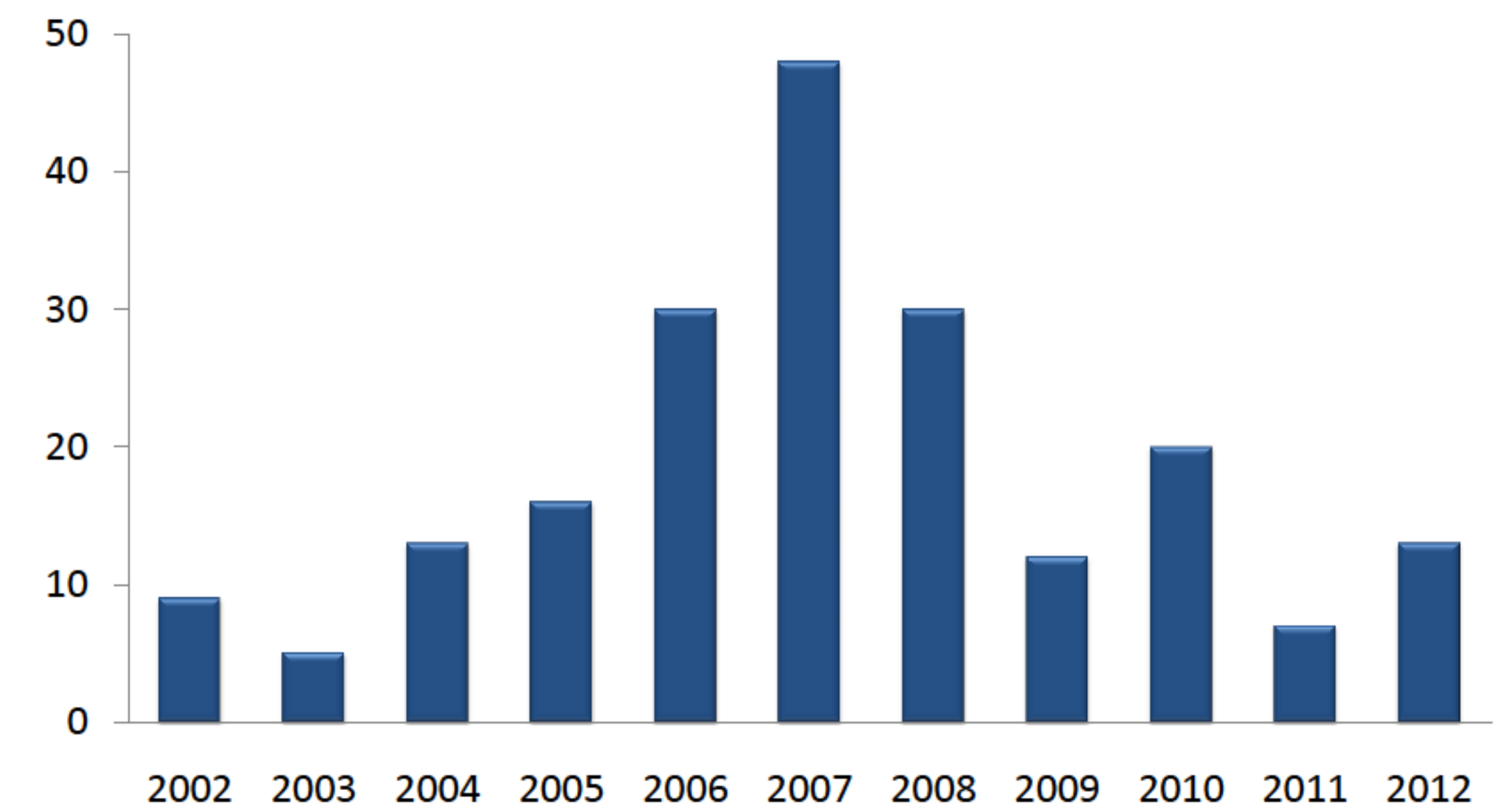
【Method】

We retrospectively analyzed a total of 193 PTx for SHPT in long-term hemodialysis patients from April 2002 to December 2012 in Showa University Northern Yokohama Hospital. Patients who had performed PEIT were excluded.

【Baseline clinical characteristics】

	Without CH (n = 160)	With CH (n = 33)	P value	
Age (years)	56.1±11.6	53.0±11.2	0.16	
Gender (Female)	75(46.9%)	9(27.3%)	0.03	
HD vintage (years)	13.3±6.4	11.7±5.8	0.20	
Primary disease	Diabetic nephropathy	11(6.9%)	3(9.1%)	0.01
	Chronic glomerulonephritis	87(54.4%)	16(48.5%)	
	Nephrosclerosis	10(6.3%)	3(9.1%)	
	Polycystic Kidney	13(8.1%)	4(12.1%)	
	another	9(5.6%)	2(6.1%)	
unknown	30(18.7%)	5(15.1%)		

【Changes in Cases with PTx】



【Preoperative biochemical parameters】

	Without CH	With CH	P value
WBC (/ μ L)	4928±1318	5606.7±1483.4	<0.05
Hb (g/dL)	11.1±1.4	11.5±1.7	0.15
Plt ($\times 10^4$ / μ L)	18.6±5.2	18.5±5.8	0.98
T-P (g/dL)	6.7±0.6	6.5±0.6	0.17
Alb (g/dL)	4.3±4.7	3.8±0.4	0.17
SUN (mg/dL)	54.3±18.9	56.2±18.8	0.59
Cr (mg/dL)	12.7±22.8	11.9±3.5	0.71
ALP(U/L)	397.7±222.3	438.1±465.9	0.63
adjusted Ca (mg/dL)	10.4±0.8	9.6±0.9	<0.05
P (mg/dL)	6.3±1.3	6.0±1.7	0.34
iPTH (pg/mL)	853.2±369.1	697.0±564.4	0.14

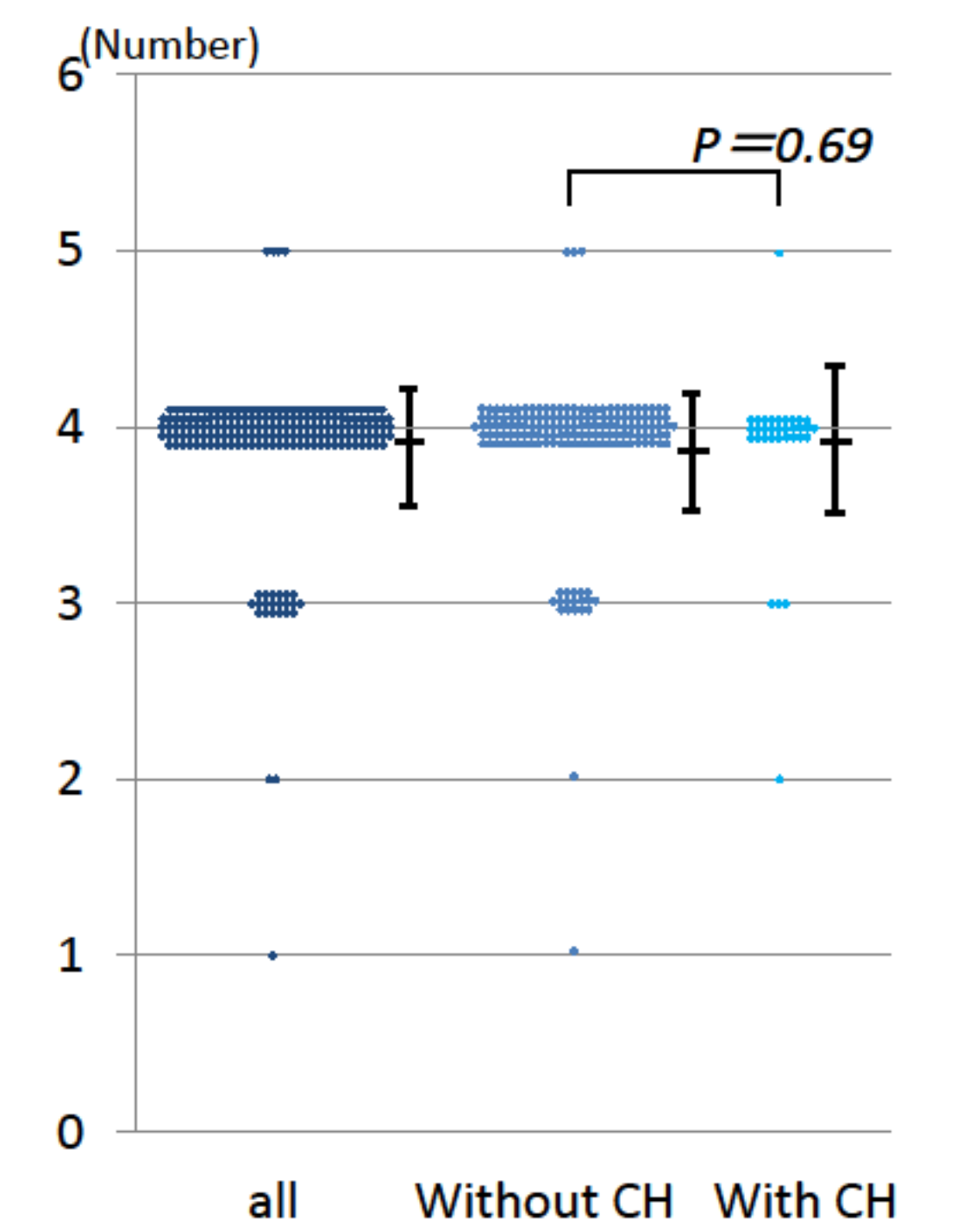
【Preoperative treatments】

	Without CH	With CH	P value
CaCO ₃	68(42.5%)	20(60.6%)	0.15
(Dose g/day)	2.6±0.2	3.3±0.4	0.06
Ca-free P binders	125(78.1%)	29(87.7%)	0.20
Oral VDRA	6(3.8%)	2(6.0%)	—
Intravenous VDRA	95(59.4%)	22(62.7%)	0.44
(Dose calculated to calcitriol μ g/week)*	2.0±0.1	1.9±0.2	0.57
CH	0(0%)	33(100%)	—
(Dose mg/day)	—	55.3±24.0	—

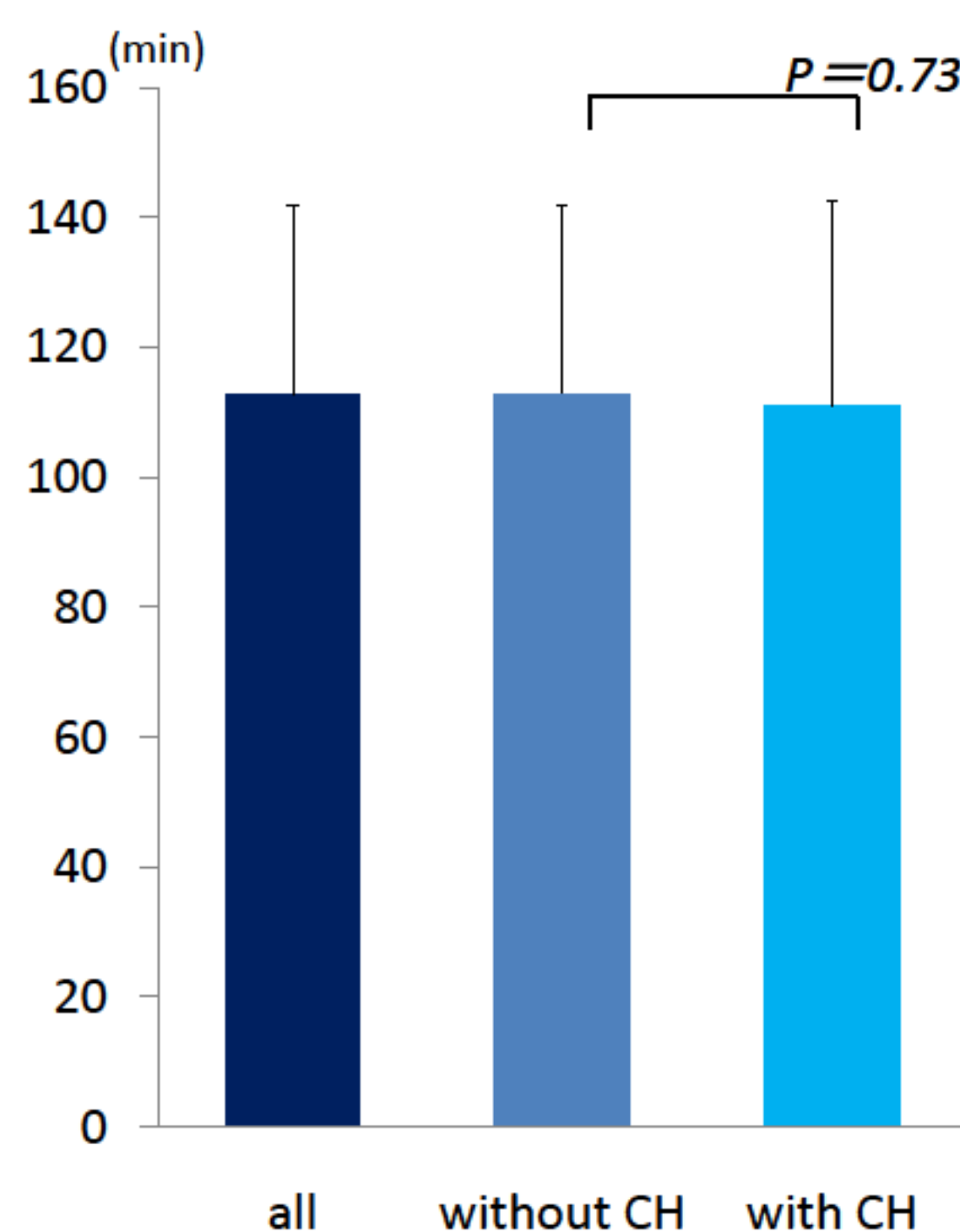
*: maxacalcitol 7.5 μ g=calcitriol 1.0 μ g

mean±SD

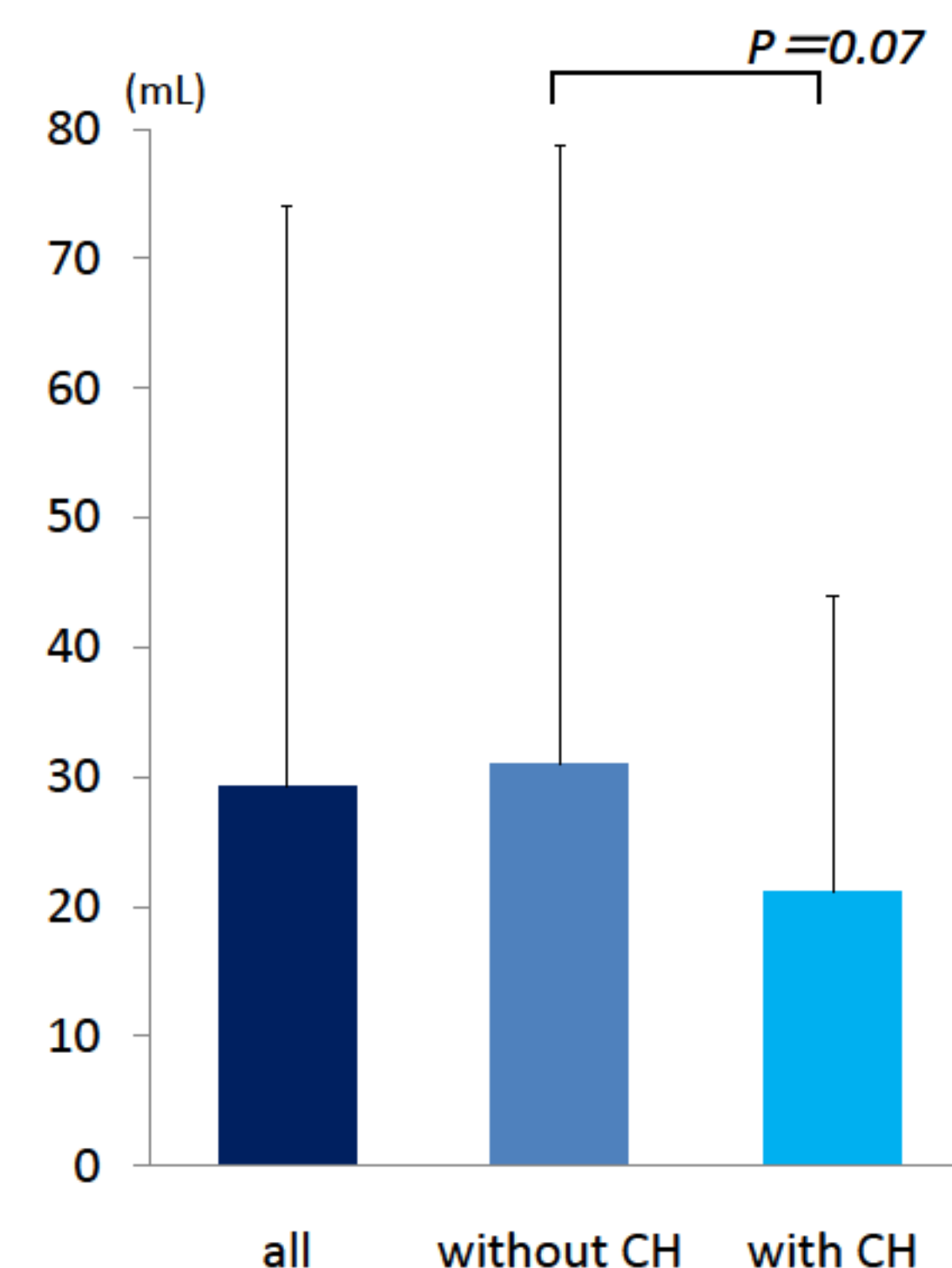
【Number of resected PTGs】



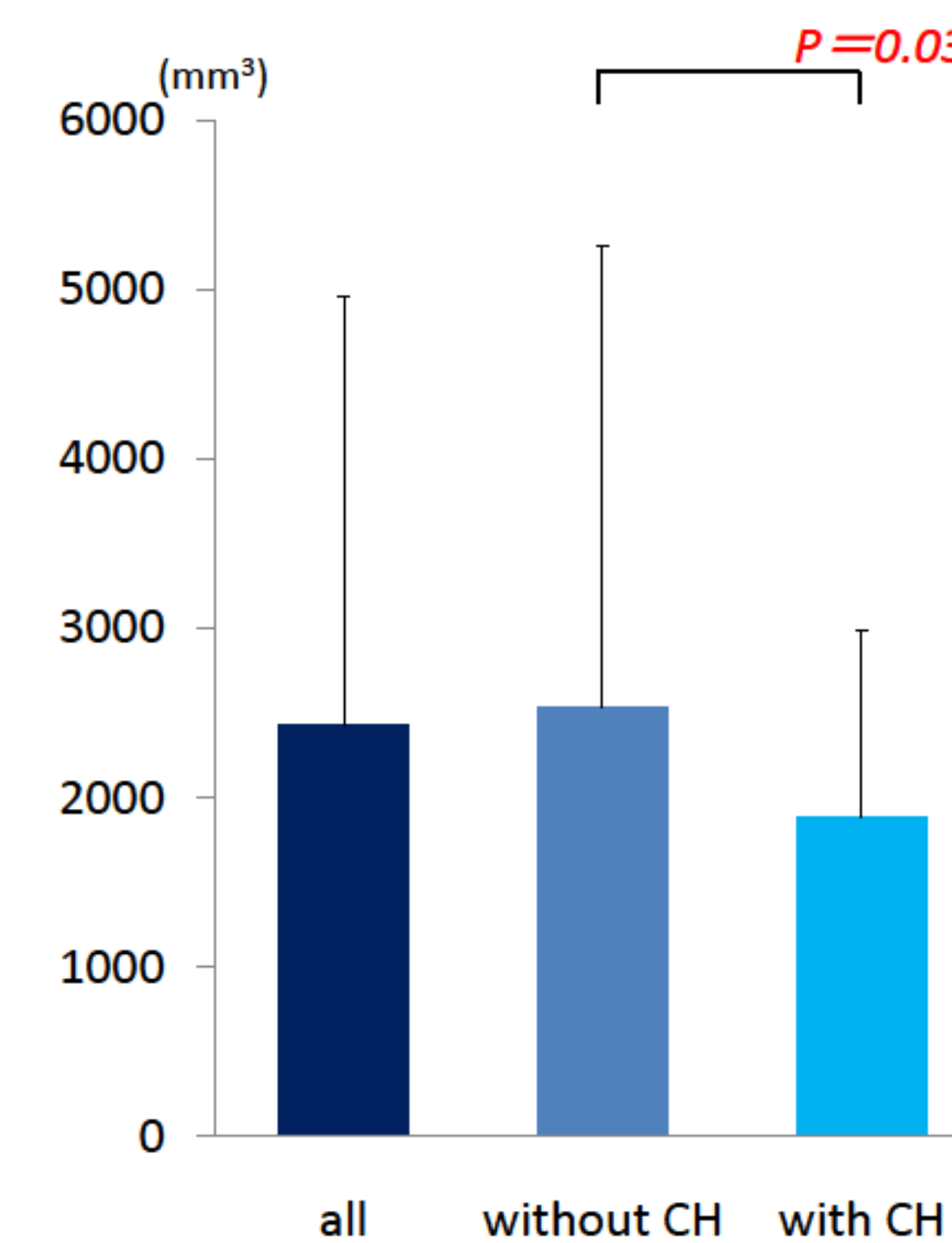
【Operative time】



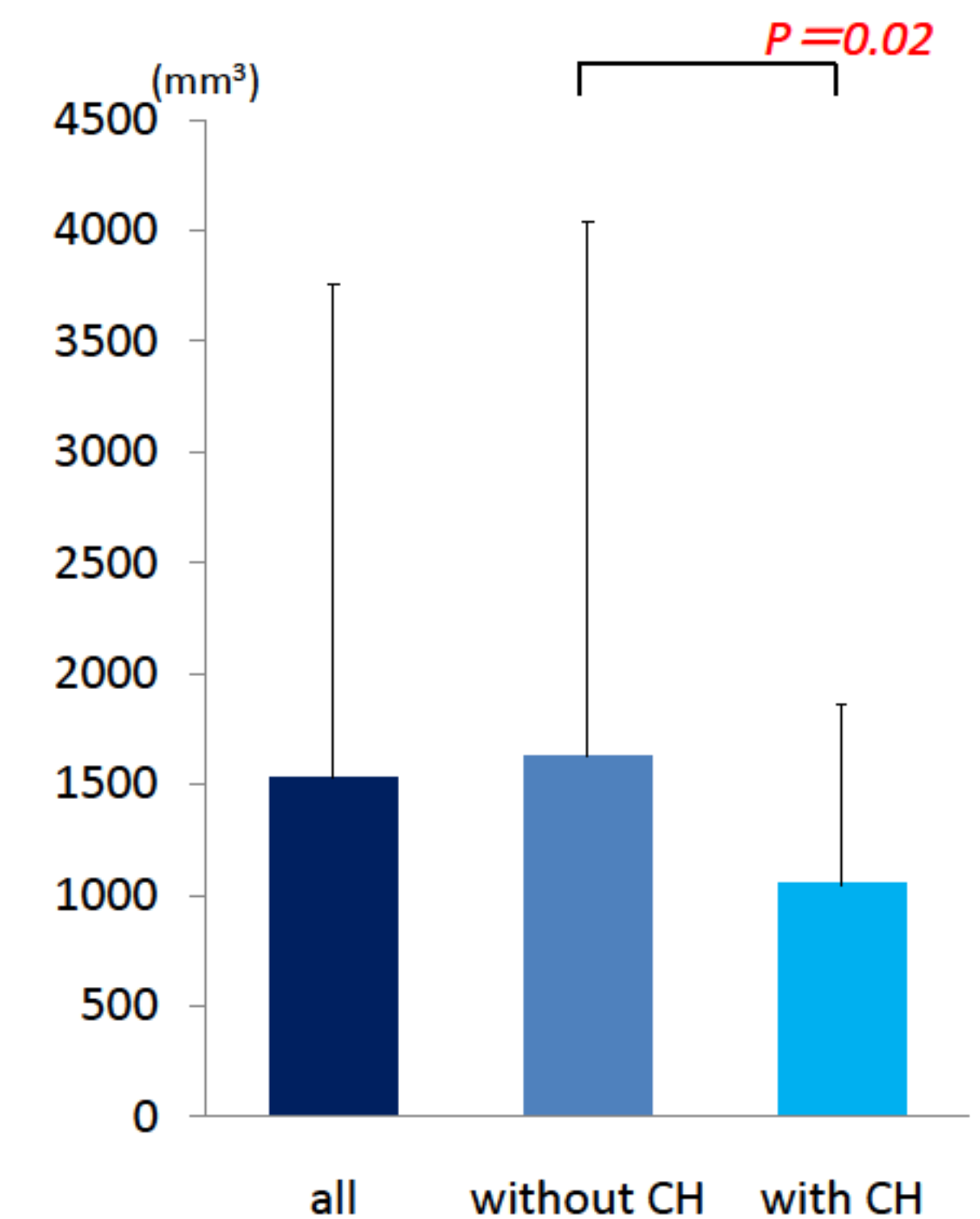
【Hemorrhage】



【Total volume of resected PTGs】



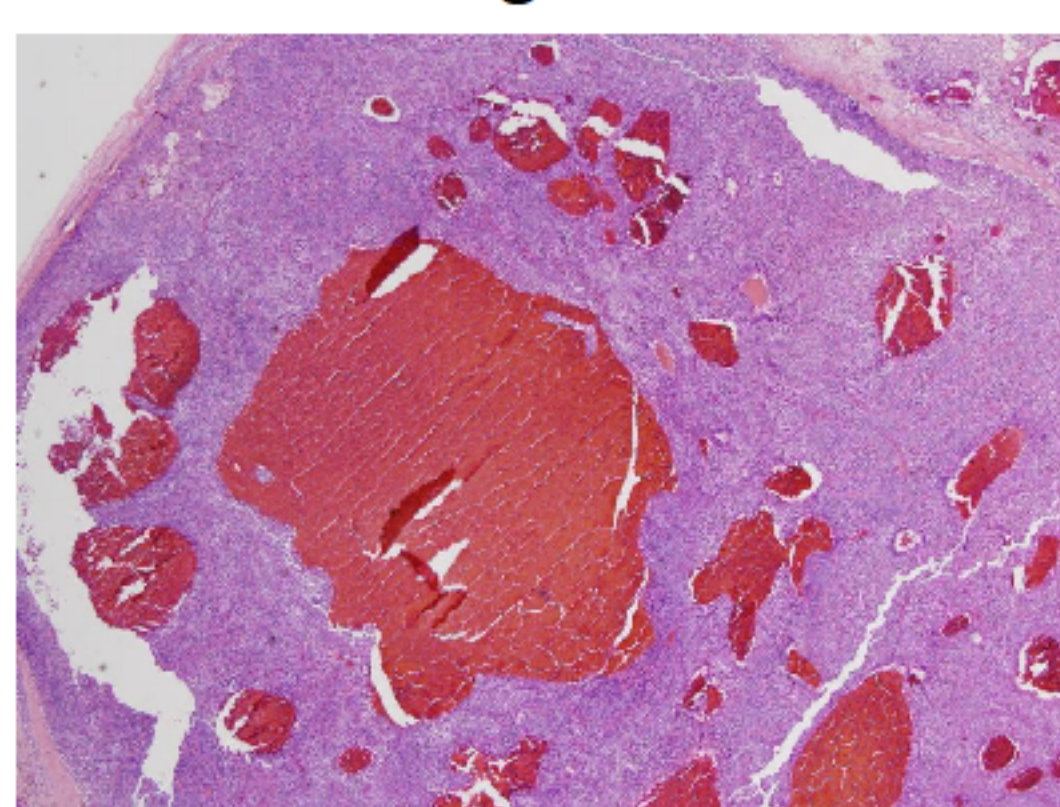
【Volume of the largest PTGs】



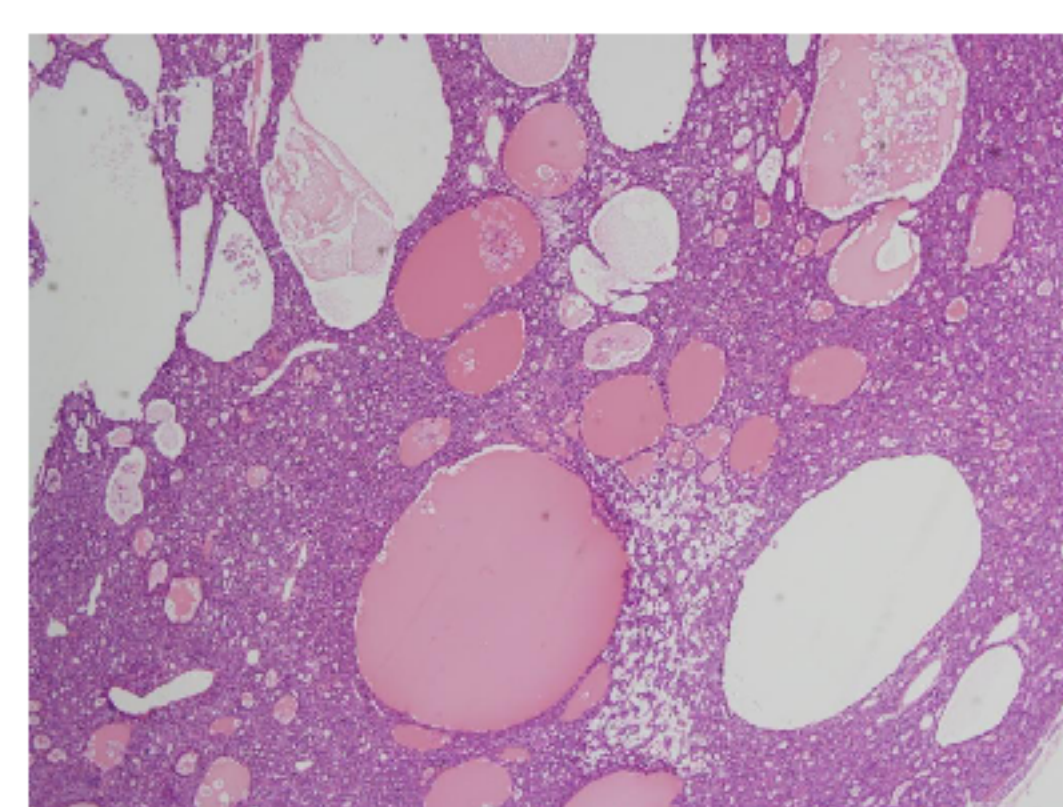
【Histopathological changes of PTGs】

	Without CH	With CH	P value
Total number of PTGs	618	131	—
Number of excluded PTGs	10	3	—
Nodular hyperplasia	455(74.8%)	102(81.6%)	0.24
Diffuse hyperplasia	153(25.2%)	26(18.4%)	
hemorrhagic necrosis	76(12.5%)	31(24.2%)	<0.05
cystic lesions	133(21.9%)	42(32.8%)	<0.05

<hemorrhagic necrosis>



<cystic lesions>



H-E stain $\times 40$

	Without CH	With CH	P value
Cases with adhesions*	13(8.1%)	8(24.2%)	<0.05
Cases with hemorrhagic necrosis or cystic lesions	64(40.0%)	25(75.8%)	<0.05

*Adhesions : The operator has determined that exfoliation is difficult.

【Summary】

- ✓ The number of PTx has been decreasing since 2008.
- ✓ There was no significant difference in intact-PTH, the number of resected PTGs, operative time between patients with or without CH. However, total PTGs volume and the largest PTGs volume were significantly lower, and more adhesions of PTGs against surrounding tissues were significantly greater in patients with CH as compared with patients without CH. In addition, cystic changes or hemorrhagic necrosis of resected PTGs were observed more frequently in patients with CH.
- ✓ The percentage of PTGs with nodular hyperplasia and diffuse hyperplasia was similar in groups with and without CH, cystic changes and hemorrhagic necrosis were significantly higher than the PTGs with CH.

【CONCLUSION】

Preoperative CH treatment might introduce pathological changes in resected PTGs in PTx for severe SHPT.

