

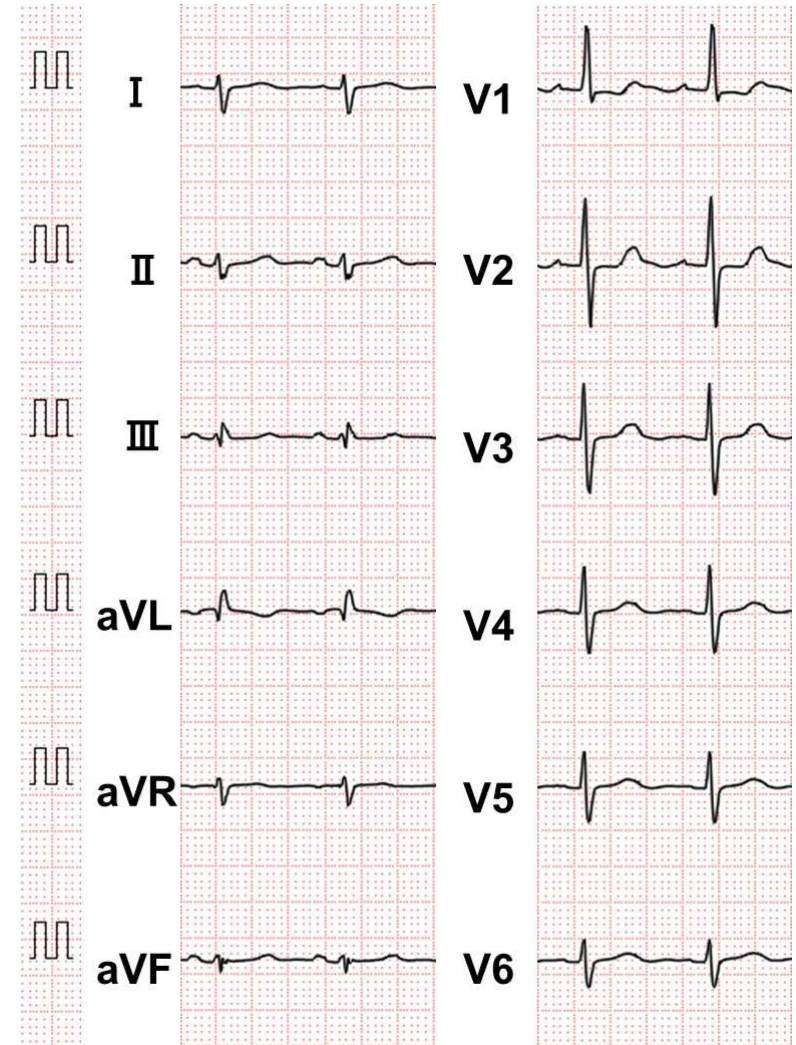
# **New Therapeutic Strategies for Adult Patients with ASD and Severe PAH; Combination of Advanced Medical Therapy and Catheter Intervention**

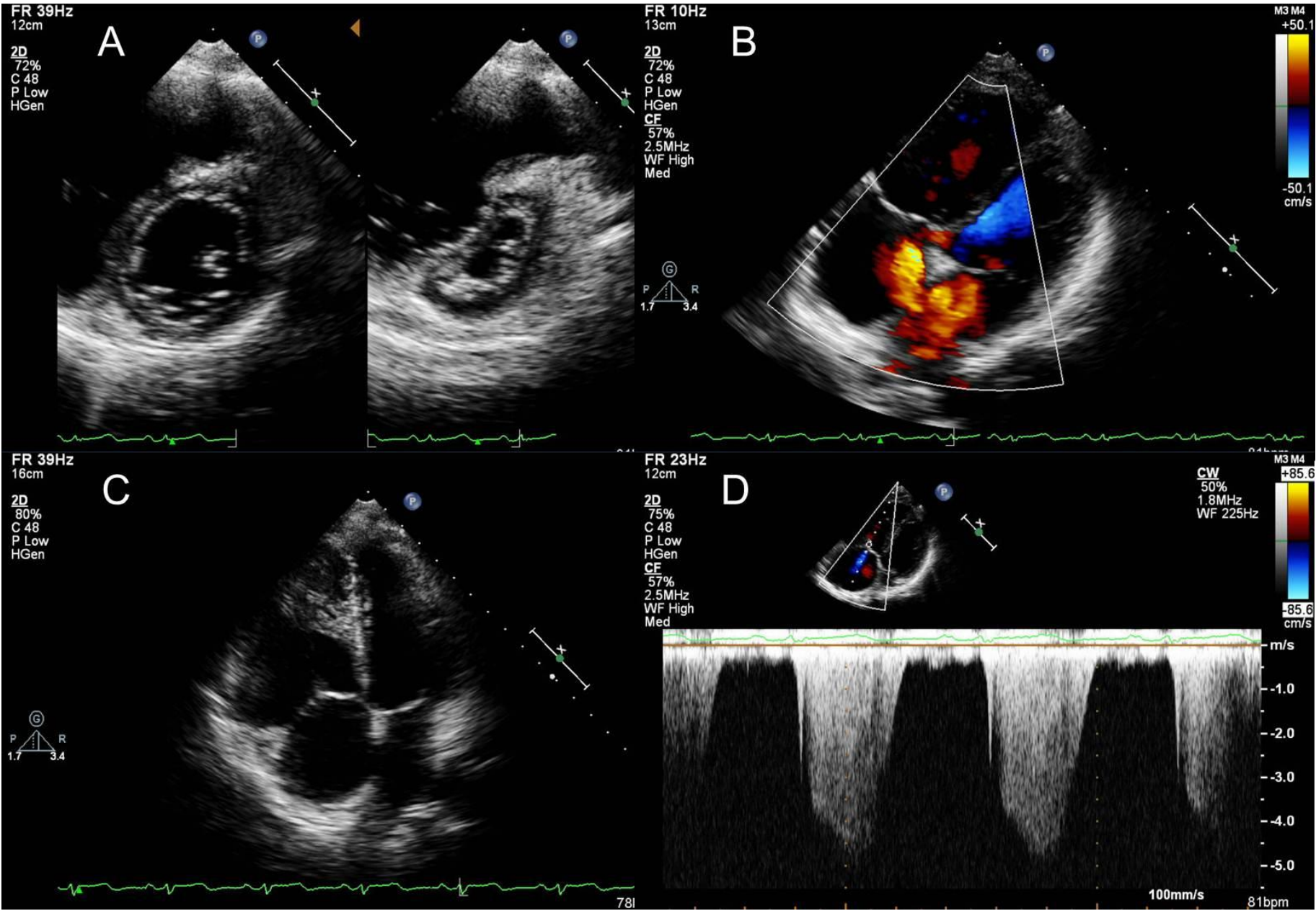
**Teiji Akagi, Yasufumi Kijima, Koji Nakagawa, Yoichi Takaya,  
Hiroki Oe, Hiroshi Ito, Shunji Sano, Hiroki Matsubara**

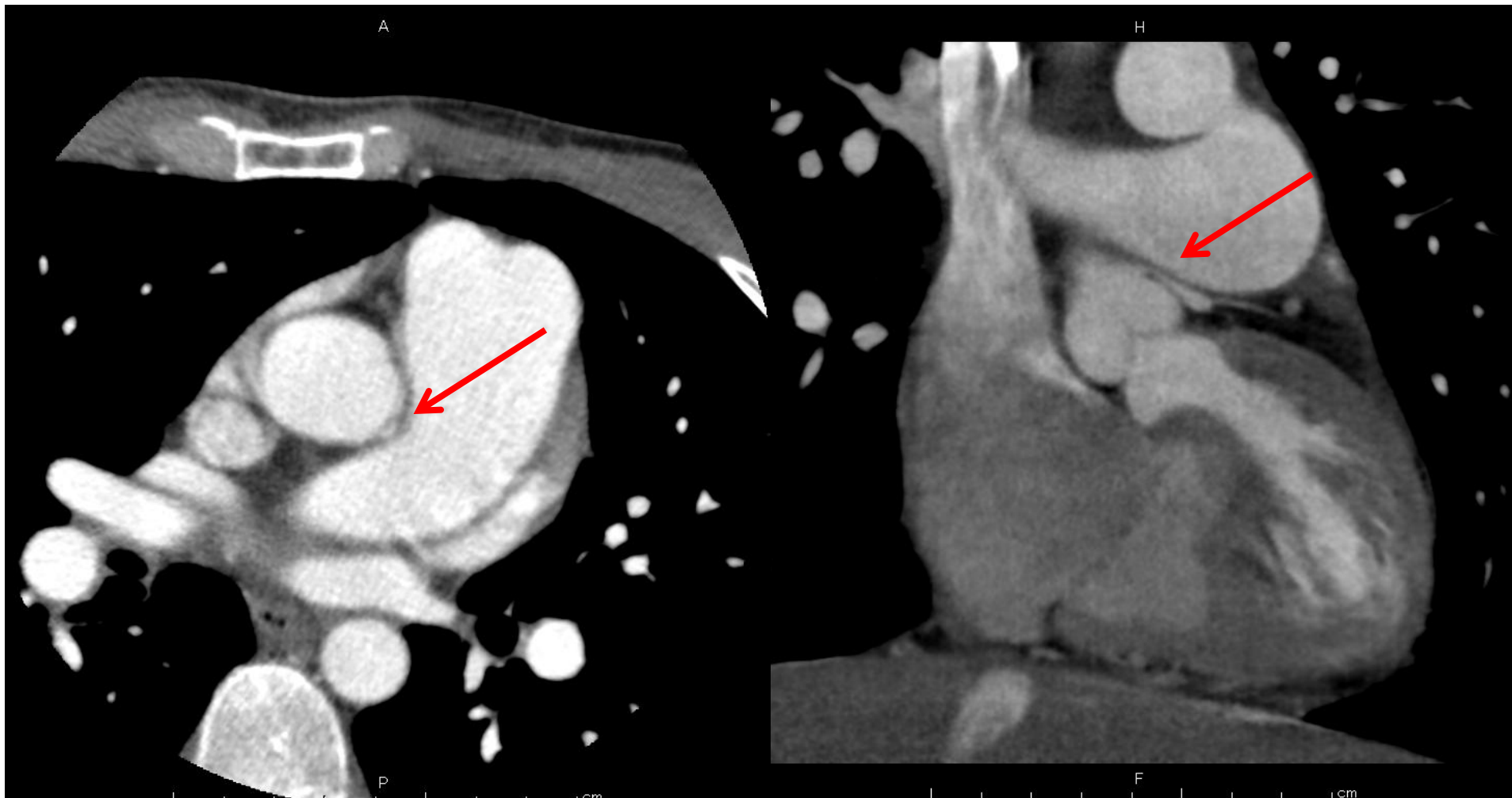
**Adult Congenital Heart Disease Center  
Okayama University, Okayama, Japan**



# 37 years old female, Eisenmenger syndrome ?







**PAP 113/50(73) mmHg, PVR 12.8 wood unit**

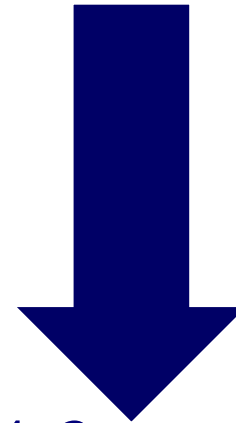


【41 years-old female】

PAP 113/50(73) mmHg, PVR 12.8 wood unit

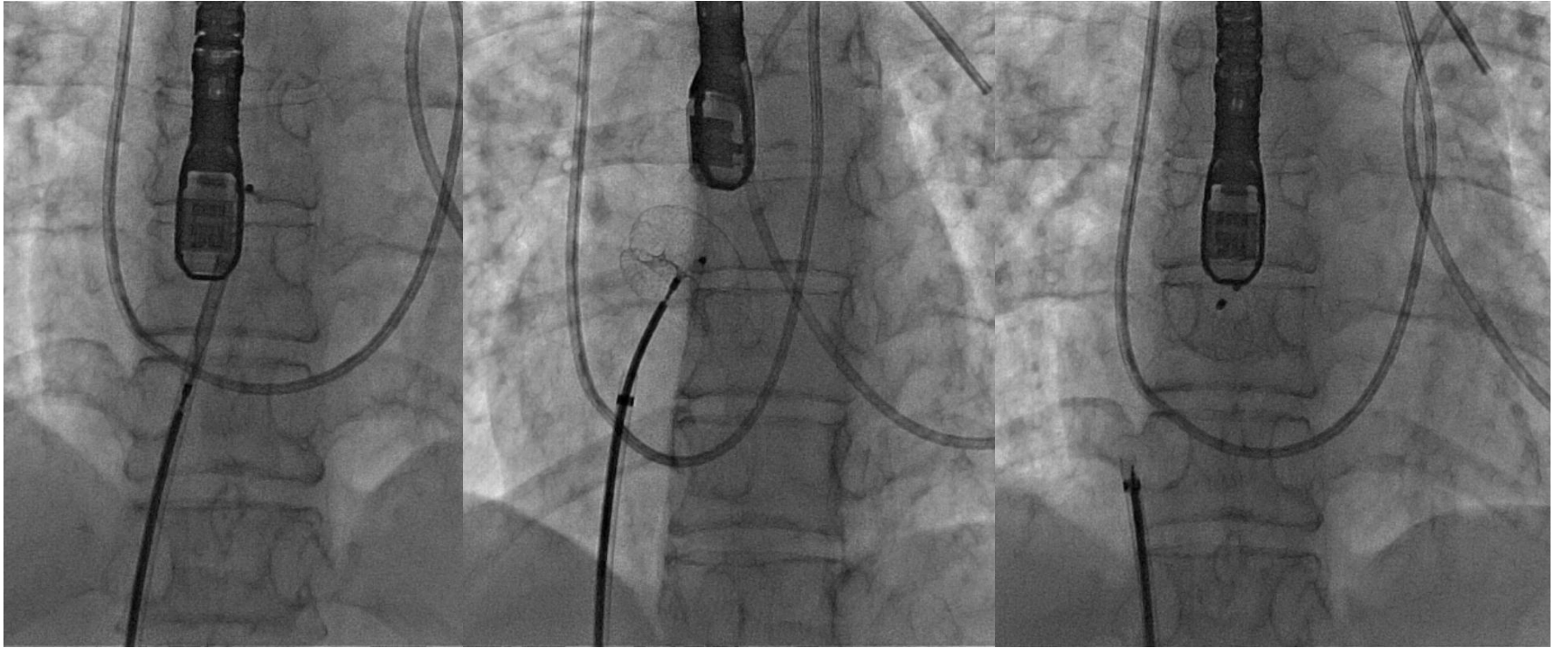
Epoprostenol 110ng/kg/min

Bosentan 125mg/day



PAP 53/22(38) mmHg, PVR 4.3 wood unit

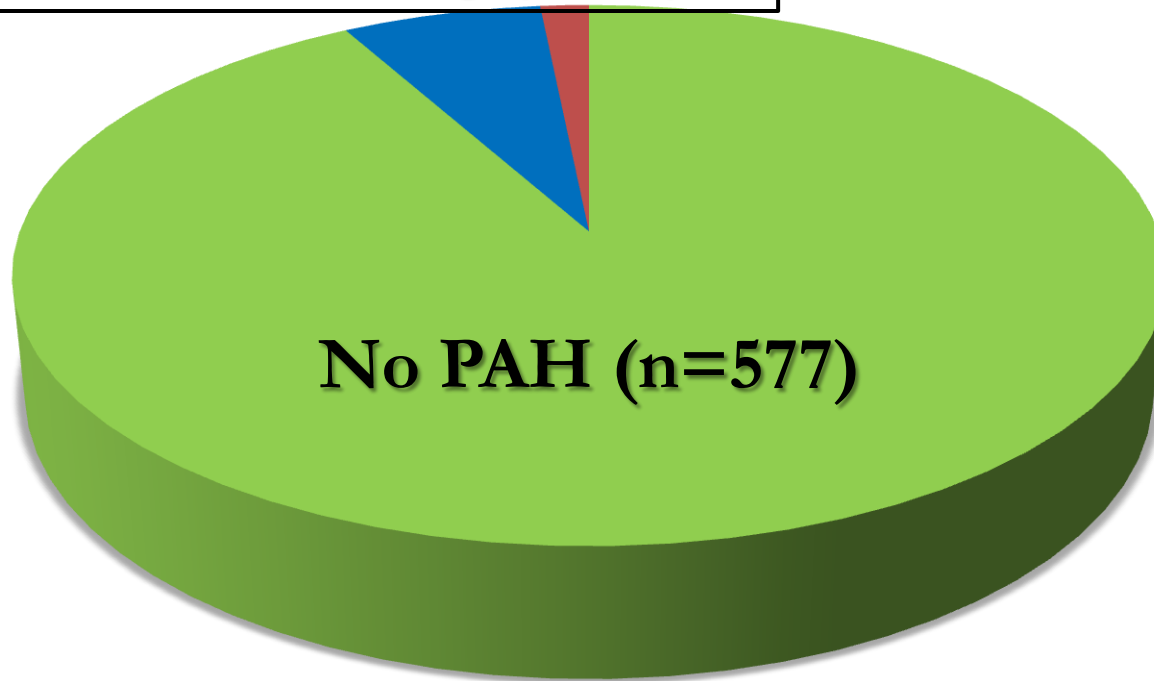
$Q_p/Q_s > 1.5$



# Incidence of PAH in candidates for catheter ASD closure

Mild to Moderate PAH  
 $25\text{mmHg} \leq \text{mPAP} \leq 40\text{mmHg}$  (n=41)

Severe PAH  
 $\text{mPAP} \geq 40\text{mmHg}$  (n=10)



PAH; mean PAP  $\geq 25\text{mmHg}$

(n = 628)

**ASD+PH (51: 5% of total)  
(mean PAP $\geq$ 25mmHg)**

**Due to other cause (10) or  
not indicated CI (3)**

**Catheter Closure  
(38)**

**Normal Medication  
(32)**

**PH target Medication  
(6)**

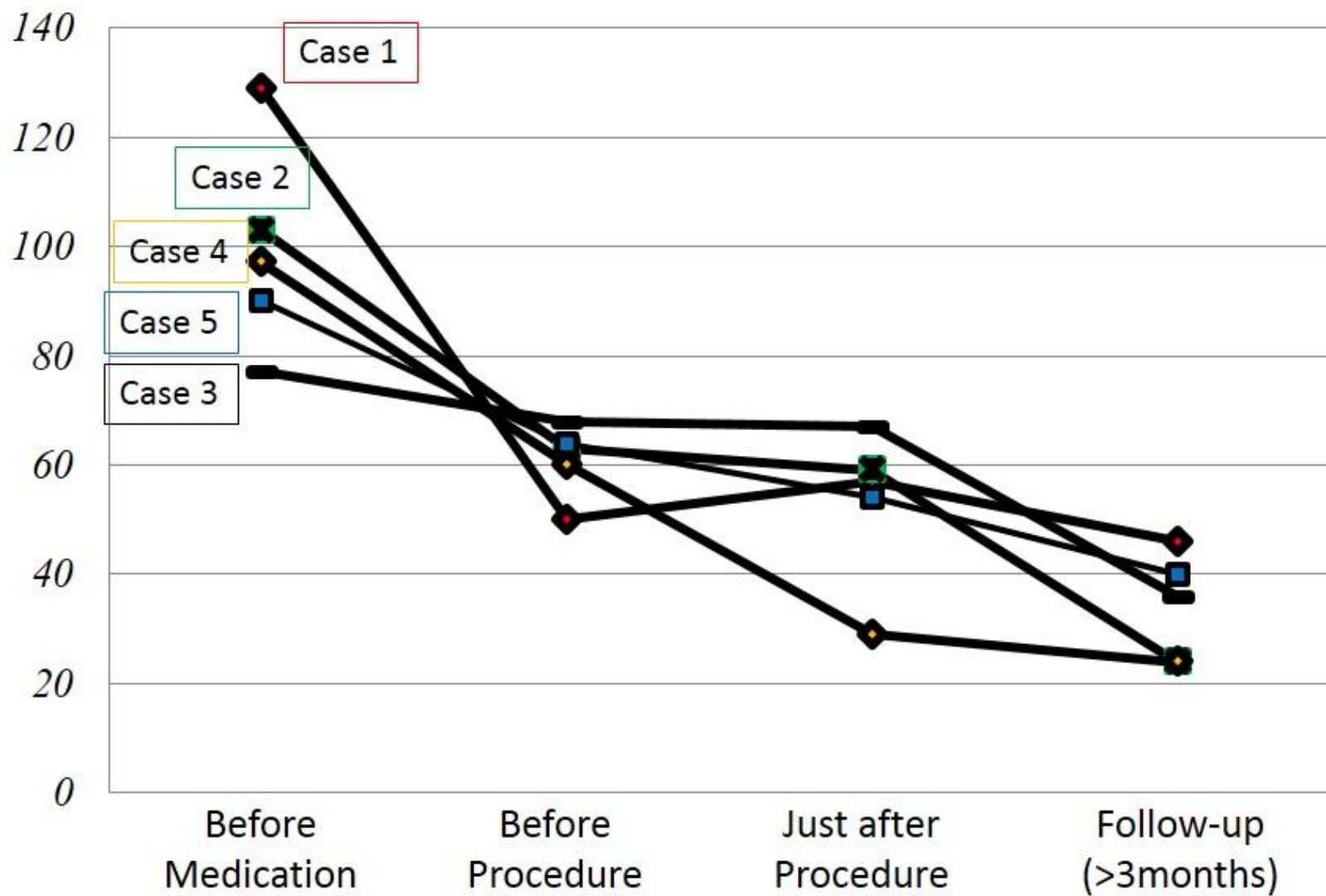


# PAH Specific Medical Treatment

<b>Case 1</b>	<b>epoprostnol 65 ng/kg/min</b>
<b>Case 2</b>	<b>sildenafil 60 mg/day</b>
<b>Case 3</b>	<b>sildenafil 60 mg/day, bosentan 250 mg/day</b>
<b>Case 4</b>	<b>beraprost 360 µg/day, sildenafil 60 mg/day, bosentan 250 mg/day</b>
<b>Case 5</b>	<b>epoprostnol 110 ng/kg/min, bosentan 125 mg/day</b>
<b>Case 6</b>	<b>bosentan 187.5 mg, sildenafil 40 mg</b>

	<b>PH targeted Medication (6)</b>	<b>Normal Medication (32)</b>	<b>p value</b>
Age (years)	35 (22 - 52)	69 (41 - 83)	0.0004
Female / Male	6 / 0	21 / 11	0.15
Systolic PAP (mmHg)	92 (74 - 118)	49 (32 - 97)	0.0004
Mean PAP (mmHg)	58 (40 - 74 )	27 (25 - 51)	0.0003
PVR (wood/unit)	7.8 (3.9 - 12.8)	2.4 (0.8 - 6.2)	0.0008
Qp/Qs	1.31 (1.08 - 2.14)	2.67 (1.63 - 6.43)	0.0007
ASD size (mm)	21 (15 - 30)	22 (12 - 39)	0.60
NYHA $\geq$ class II	6 (100%)	23 (79%)	0.56

(mmHg)



## Improvement in estimated systolic PAP

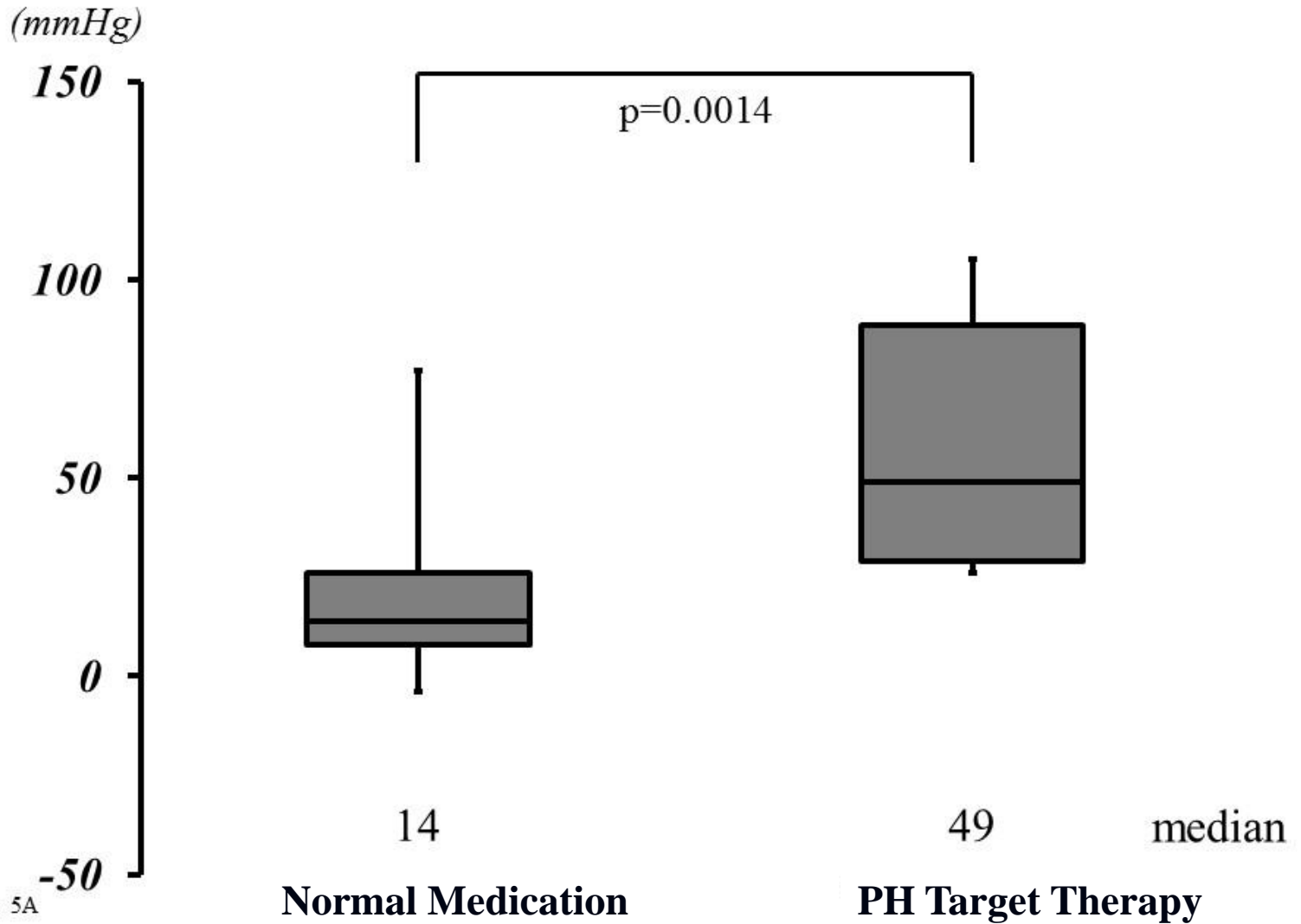
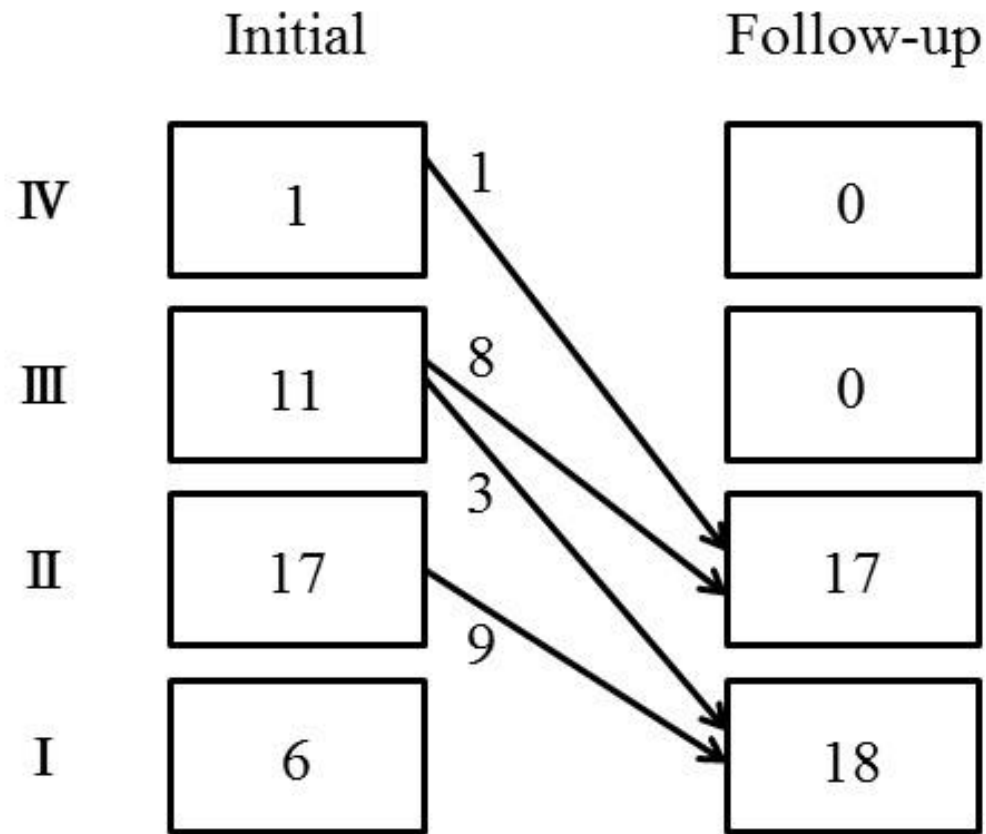


Figure 5A

## NYHA functional class



Log 10 BNP

$1.90 \pm 0.45$

$1.74 \pm 0.47$

$p=0.0017$

# Conclusions

- Combination of PH specific medical therapy and catheter intervention may expand the therapeutic indication in patients with ASD and severe PAH, who considered as inoperable patients under the conventional medical management.
- Disappearance of increased pulmonary blood flow in patients with ASD+PH contributes further reduction of pulmonary vascular resistance, may produce the improvement of long-term survival.



# Course change of estimated systolic PAP

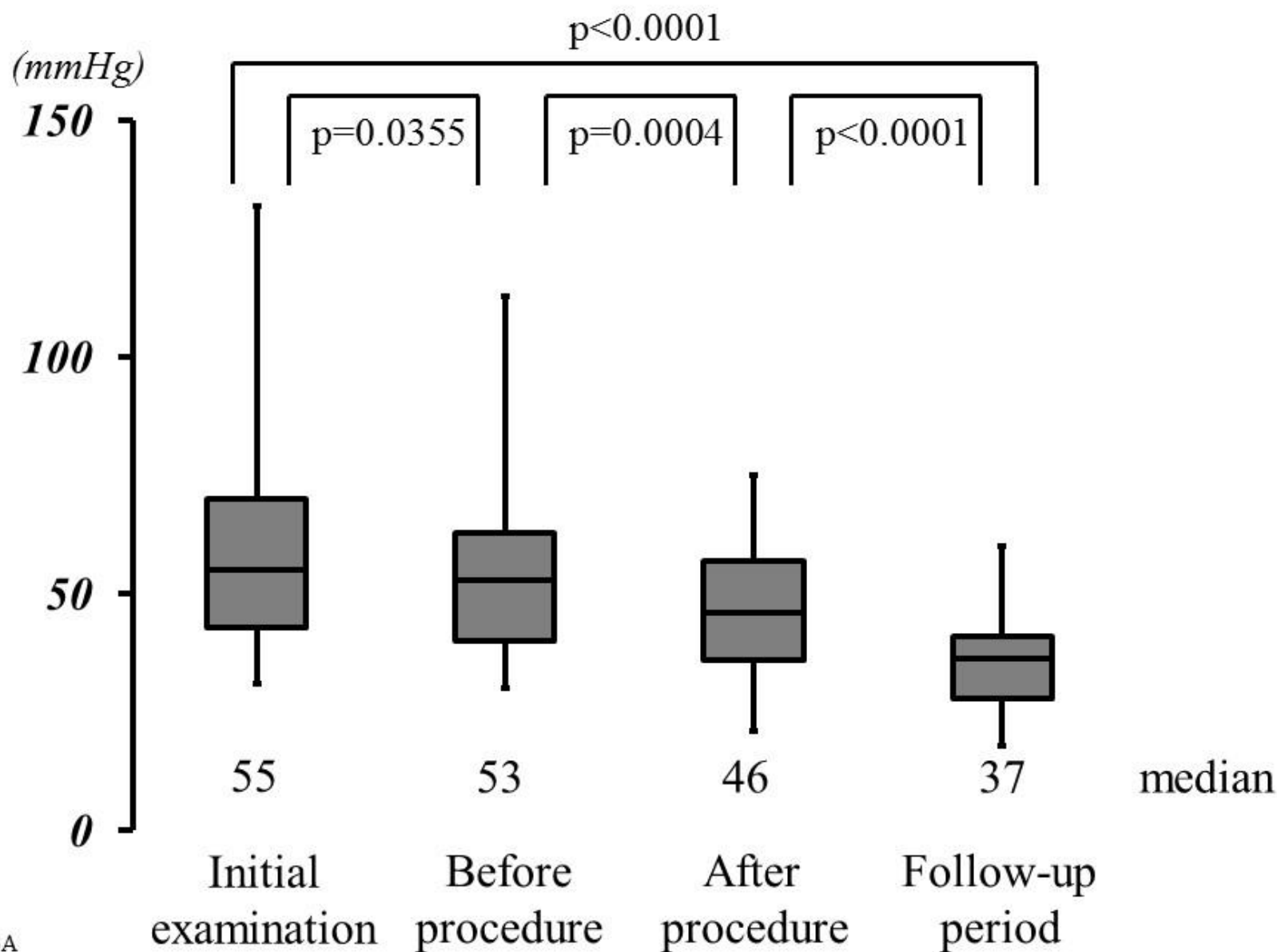


Figure 3A

# Course change of estimated systolic PAP ( $\geq 3$ Wood Unit)

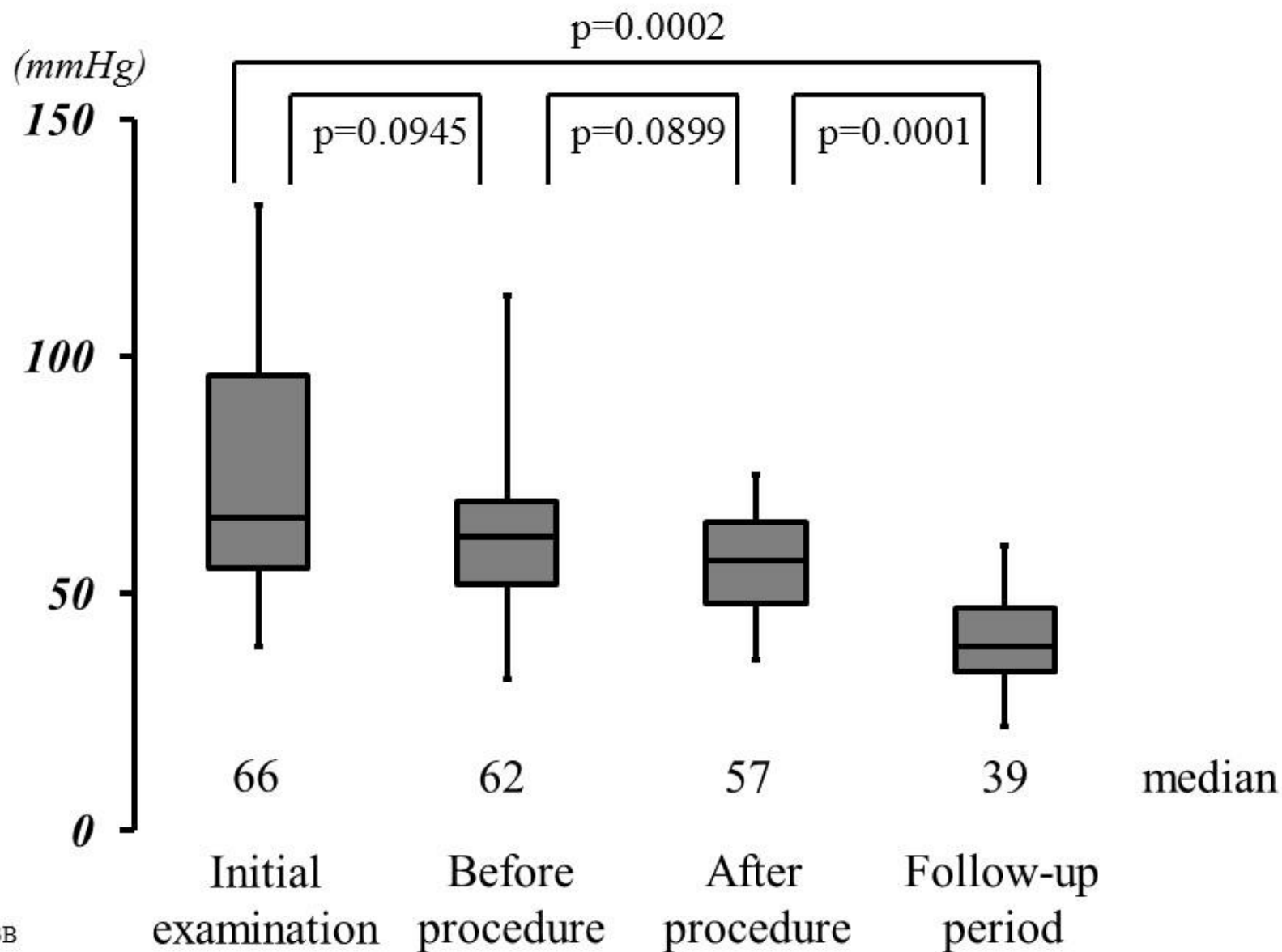


Figure 3B

TAMURA, YOUKO  
1971-06-10 F  
0003664172  
2008-07-03

OKAYAMA UNIV. HOSPITAL

e

LAD  
50

CRAD  
0

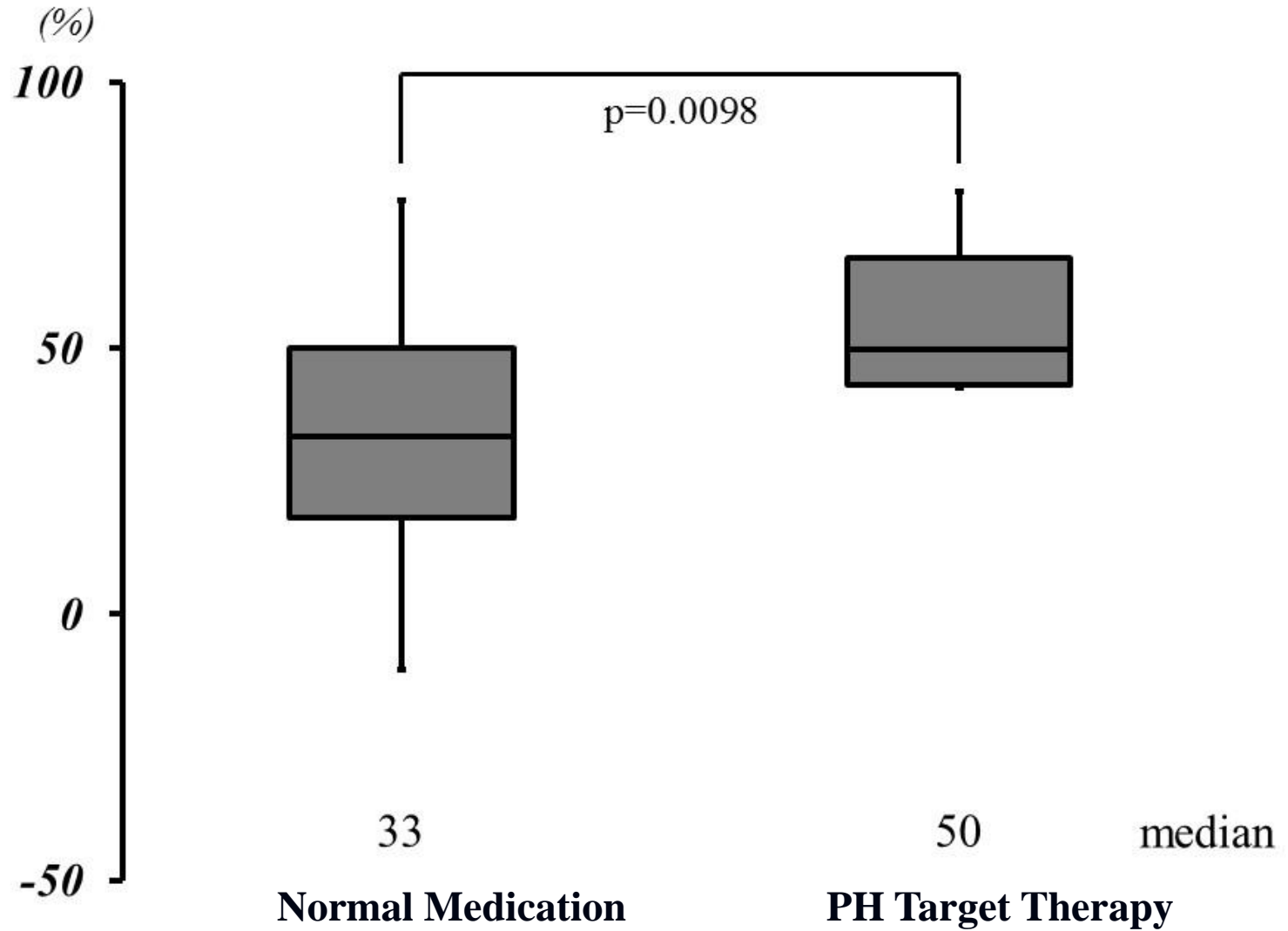
T-image:  
3.37

T-run:  
15:41:06

RUN  
9  
123  
IMAGE  
51



## Degree of improvement in estimated systolic PAP



FR 37Hz  
10cm

2D  
57%  
C 50  
P Off  
Gen



G  
P R

FR 37Hz  
10cm

1:45:37

M4

2D  
57%  
C 50  
P Off  
Gen



G  
P R

✦ Dist 1.65 cm

PAT T: 37.0C  
TEE T: 38.0C

FR 37Hz  
10cm

2D  
57%  
C 50  
P Off  
Gen



G  
P R

PAT T: 37.0C  
TEE T: 37.9C

71bpm



PAT T: 37.0C  
TEE T: 37.9C

80 bpm

78.1C

90 bpm

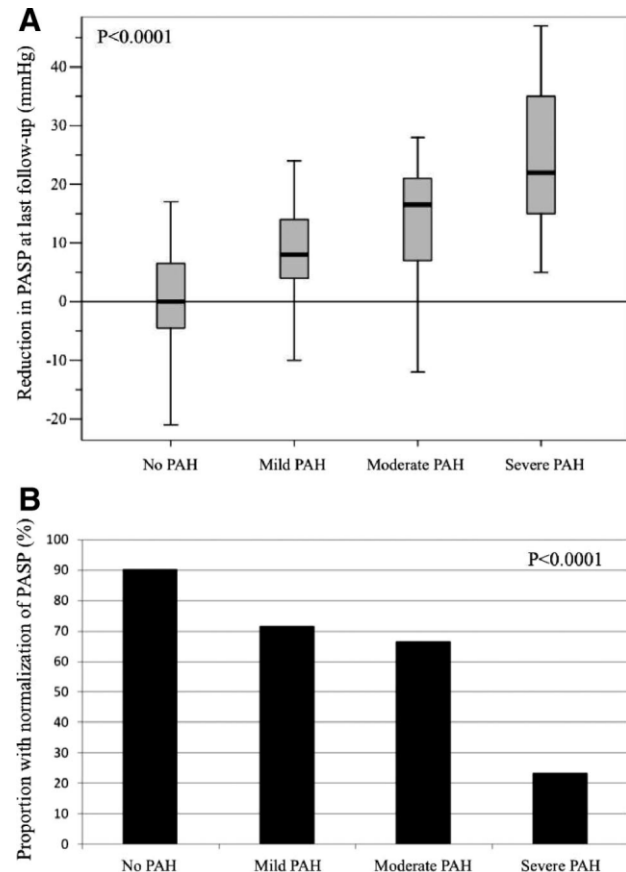
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JPEG

# Pulmonary Arterial Hypertension in Patient With Transcatheter Closure of Secundum Atrial Septal Defects.

Patient with moderate or severe PAH may benefit from substantial reductions in pulmonary artery pressures after transcatheter ASD closure.

However, this study excluded the patients who treated by PAH specific medication.





# Background

- **Therapeutic strategy for atrial septal defect (ASD) patients with severe pulmonary artery hypertension (PAH) still remains controversial.**
- **Recent advances in medical therapy for PAH and catheter intervention may provide new therapeutic approaches in these patients.**