

**Antitoxin serum** injection is effective for  
snake bite patients with acute  
thrombocytopenia from “Mamushi”  
(Japanese pit viper) envenomation

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<http://www.geocities.jp/kyoketu/5609.html>

# This is “Mamushi”

## Geographic range

: Korea, China and Japan

: Mountain Forest near water

## Season

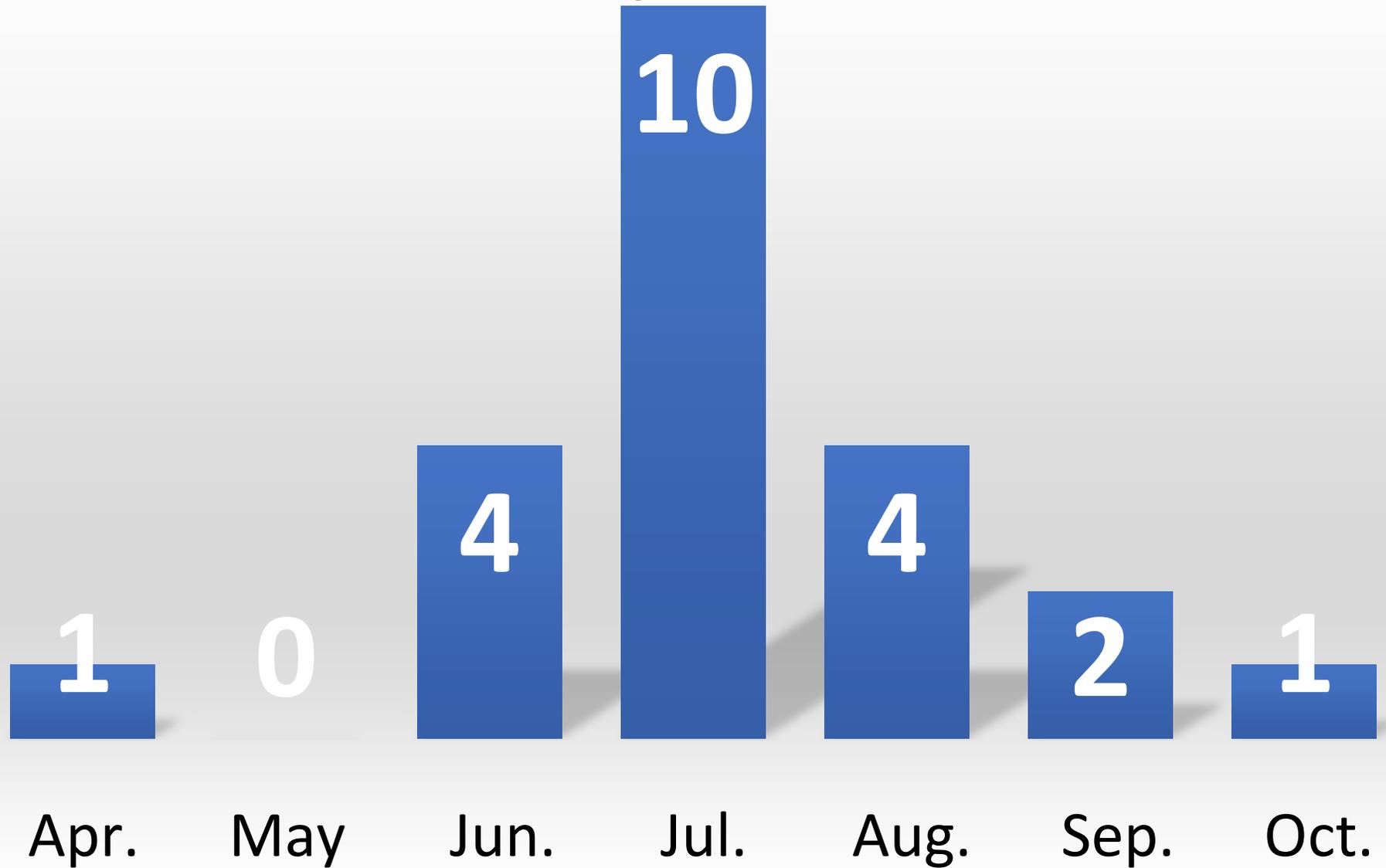
: Spring-Autumn

## Average length

:  $17\frac{3}{4}$ - $31\frac{7}{8}$  inches

# Patient Numbers in 2017

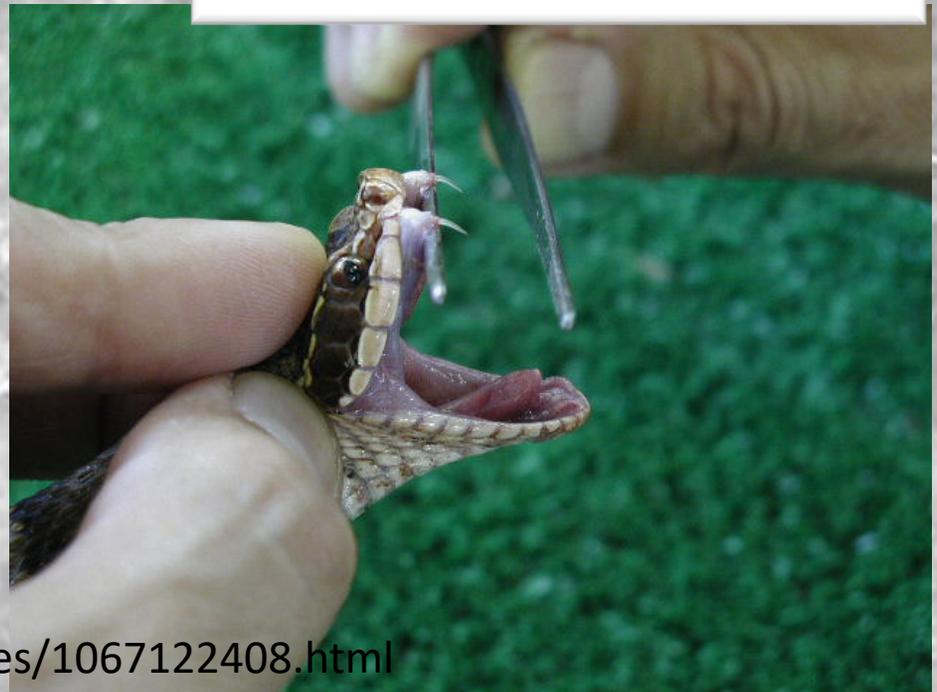
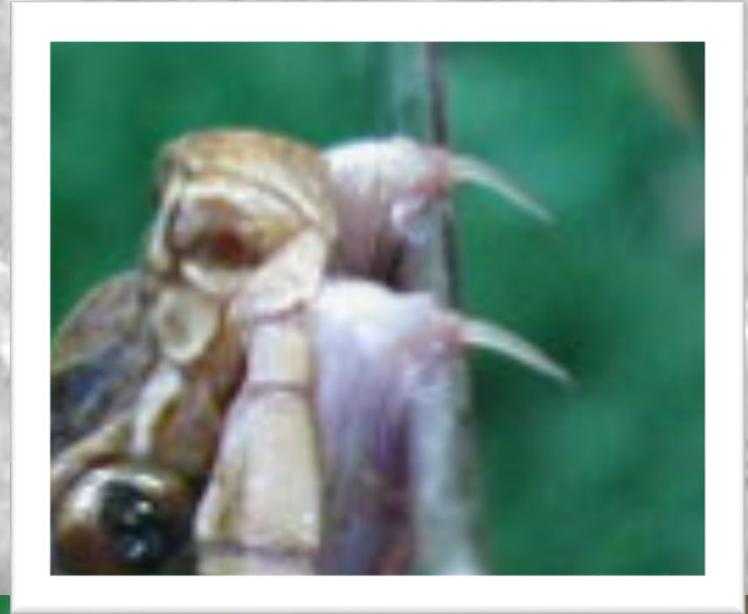
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This is “Mamushi”

Two fangs

Strong toxin

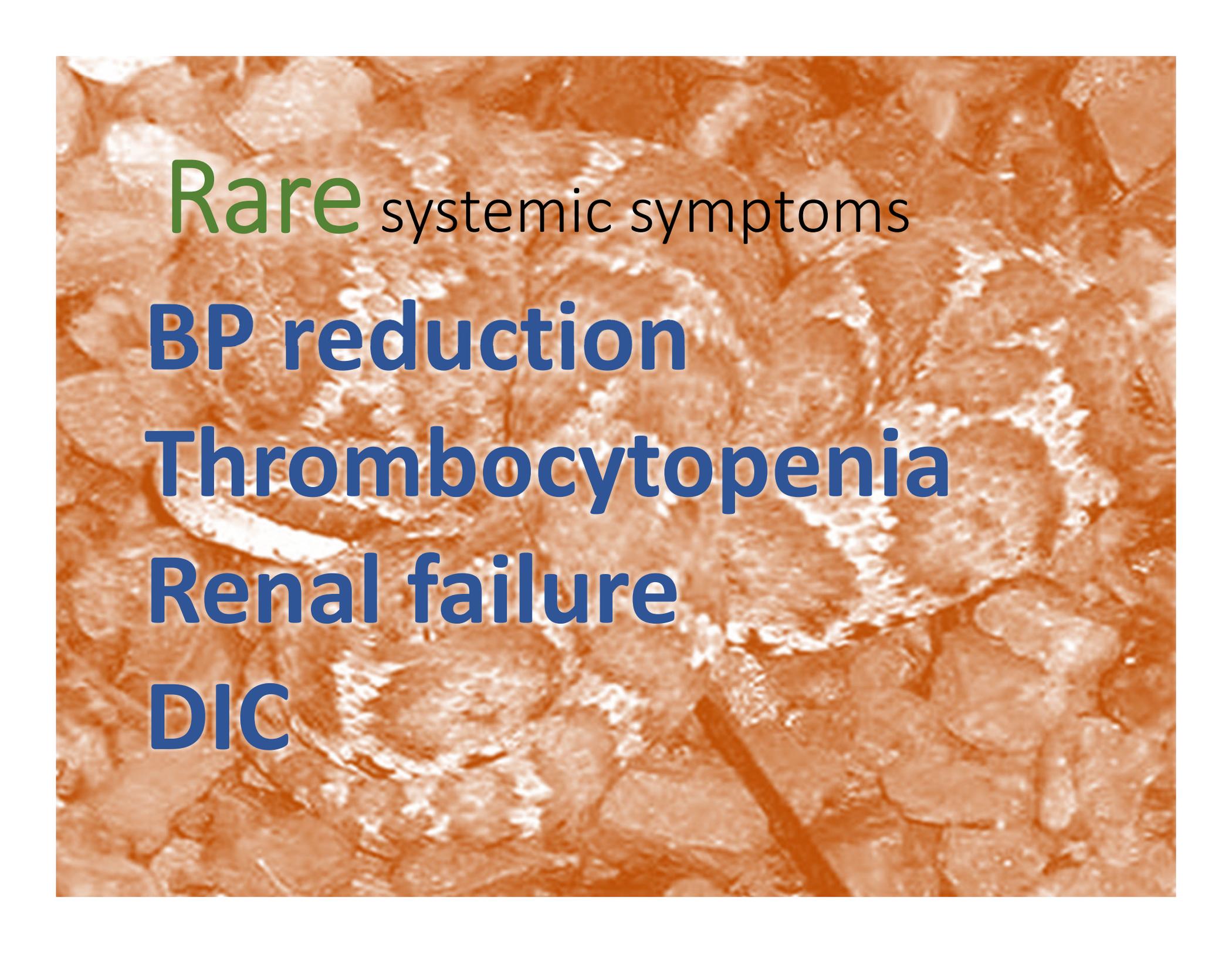


Common local symptom

**Swelling**



⇒ Disappears in a few days

The background of the slide is a microscopic image of tissue, likely showing cellular structures and possibly some pathological changes. The text is overlaid on this image.

**Rare** systemic symptoms

**BP reduction**

**Thrombocytopenia**

**Renal failure**

**DIC**

# Case presentation

74 yo male

In **August**,

He was bitten on **his right thumb**  
by Mamushi.



# EMS vital signs

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BP **88/40** mmHg, HR **130** bpm

**Shock !**

**Transferred to local hospital**

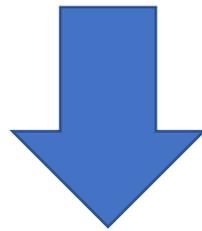
⇒BP restored

# Blood exam at 1 hour

WBC	11,300	/ $\mu$ L	TP	8.0	g/dL	Na	140.5	mEq/L
RBC	524 $\times$ 10 <sup>4</sup>	/ $\mu$ L	Alb	4.5	g/dL	K	3.65	mEq/L
Hb	16.9	g/dL	AST	29	IU/L	Cl	107.0	mEq/L
Hct	46.8	%	ALT	17	IU/L			
PLT	1.5 $\times$ 10 <sup>4</sup>	/ $\mu$ L	LDH	245	IU/L			
			ALP	179	IU/L			
PT	86.1	%	T-Bil	1.96	mg/dL			
INR	1.09		CK	186	IU/L			
APTT	31.9	秒	BUN	17.8	mg/dL			
D-D	2.80	$\mu$ g/dL	Crea	1.36	mg/dL			

# 【Emergency treatment】

- Solu-Medrol 125mg
- **Antitoxin serum**
- Small incision



Transferred to our hospital



# Blood exam at 4 hours

WBC	16,500	/ $\mu$ L	TP	6.9	g/dL	Na	142	mEq/L
RBC	508	$\times 10^4$ / $\mu$ L	Alb	4.1	g/dL	K	4.0	mEq/L
Hb	15.9	g/dL	AST	30	IU/L	Cl	109.0	mEq/L
Hct	47.8	%	ALT	17	IU/L			
<b>PLT</b>	<b>16.7</b>	<b><math>\times 10^4</math> /<math>\mu</math>L</b>	LDH	273	IU/L			
			ALP	166	IU/L	A blood gas exam		
PT	75.2	%	T-Bil	1.5	mg/dL	PaCO <sub>2</sub>	35.3	mmHg
INR	1.11		CK	166	IU/L	PaO <sub>2</sub>	72.7	mmHg
APTT	28.5	sec	BUN	16	mg/dL	pH	7.437	
D-D	4.1	$\mu$ g/dl	Crea	1.00	mg/dL	HCO <sub>3</sub> <sup>-</sup>	23.4	mmHg
						BE	0.2	mmol/L

# Platelet trend

platelet  
 $\times 10^4 [ /\mu\text{l}]$

20

↓ after

15

10

antitoxin serum injection

5

0

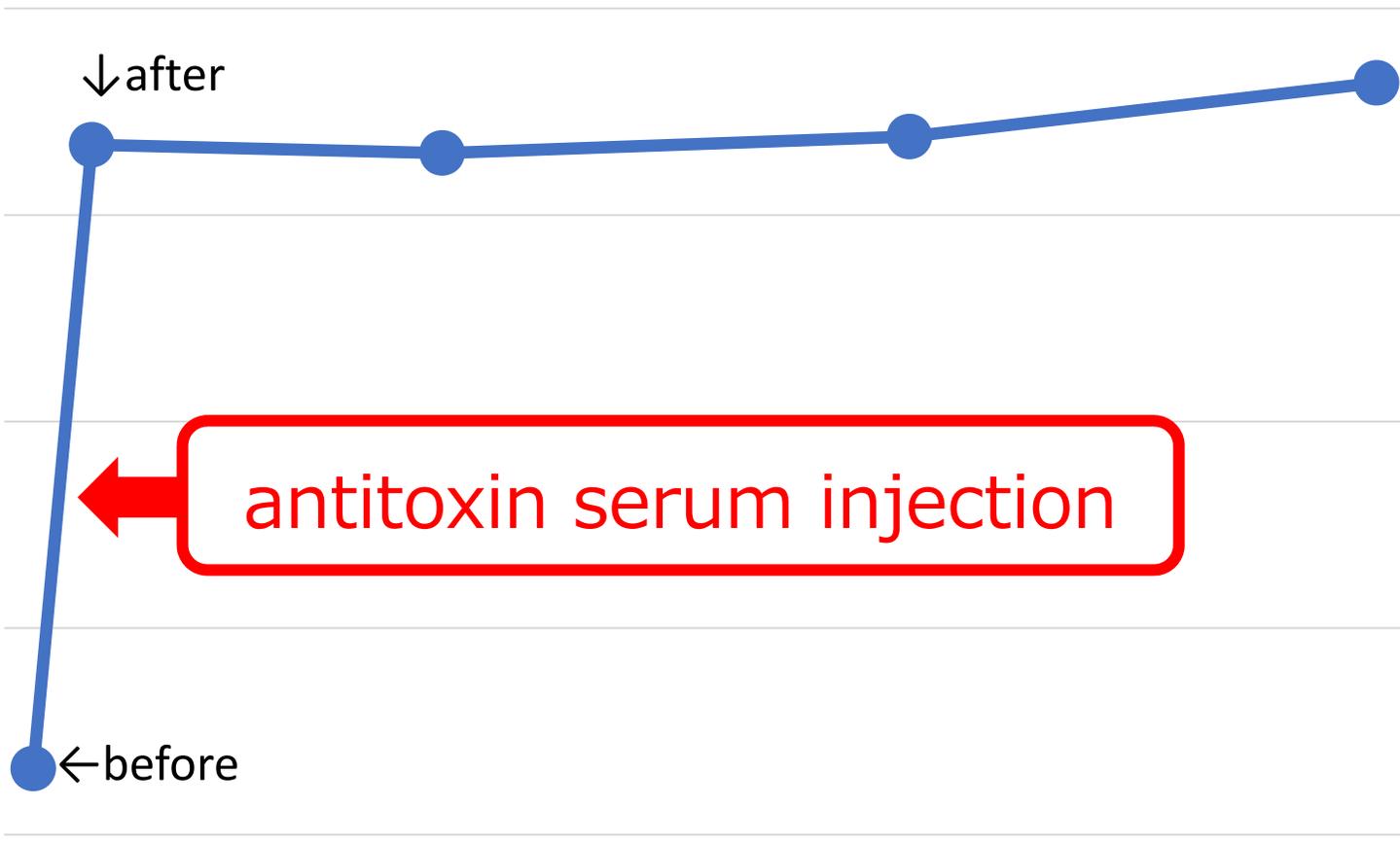
← before

1st

2nd

3rd

4th [Day]



This case...

- Local

Slight swelling



- Systemic

Platelet ↓

Shock

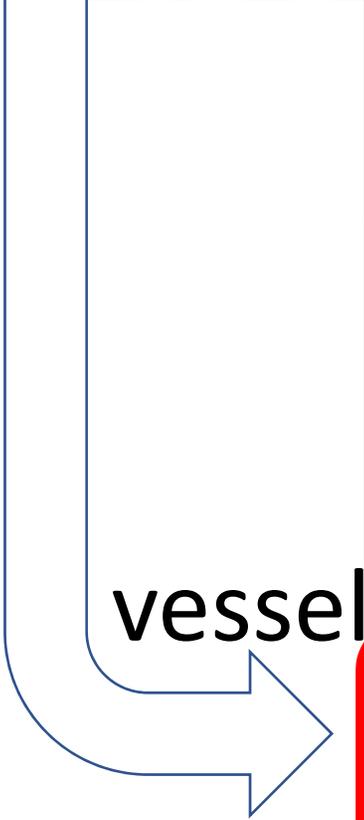
PLT  $1.5 \times 10^4$  / $\mu$ L

BP 88/40 mmHg, HR 130 bpm

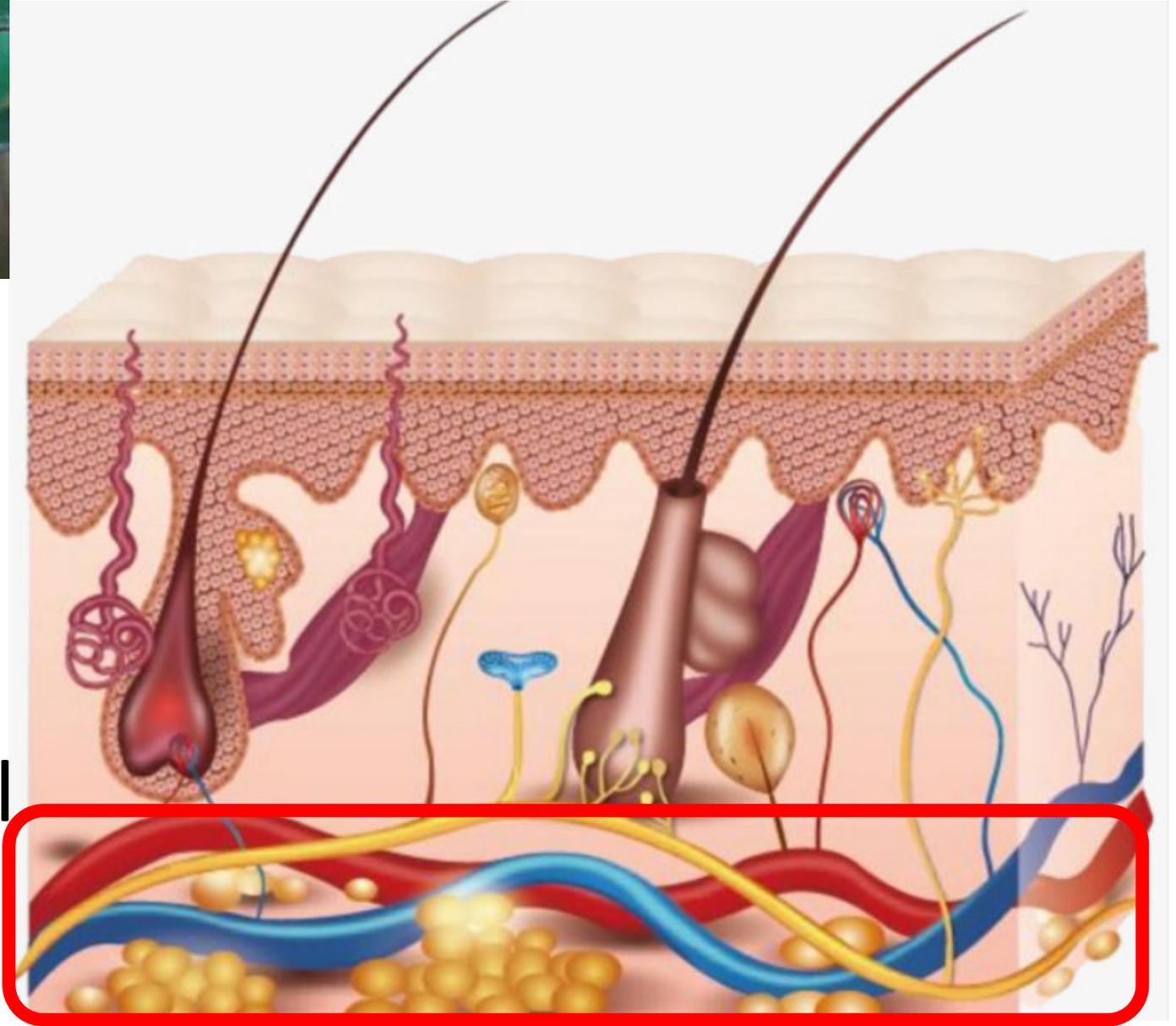


Discussion

***Why such a rapid reaction?***

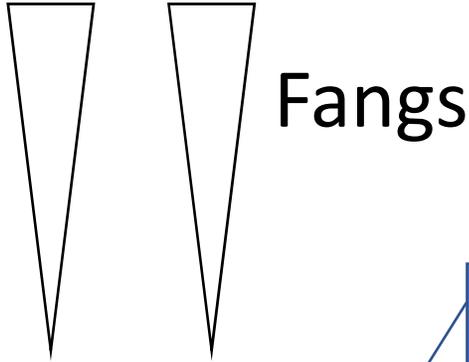


vessel



# Effect of “Mamushi” toxin

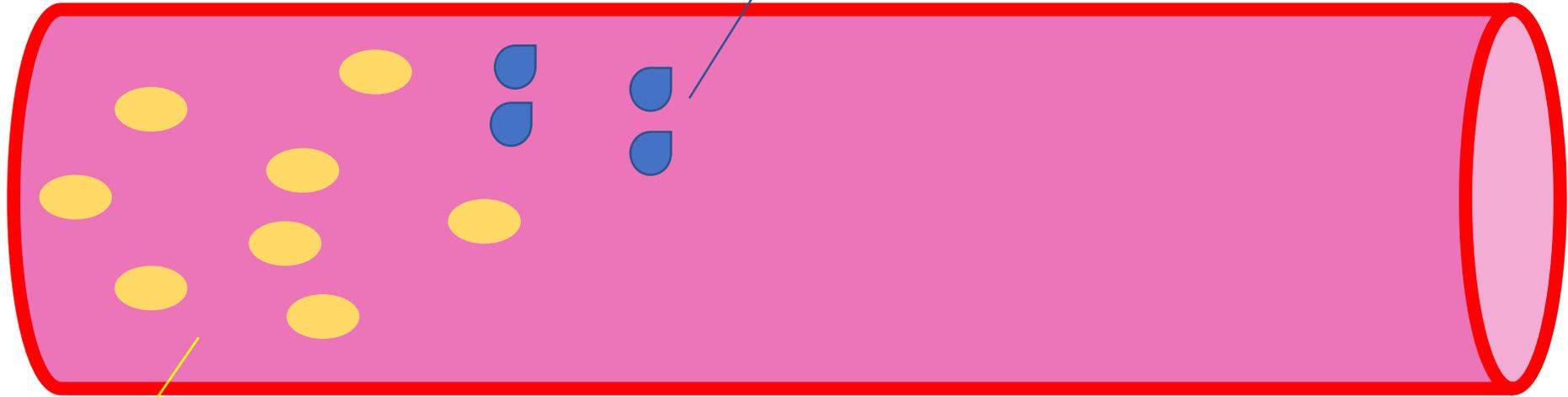
- ① Protein breakdown
- ② Vessel disorder
- ③ Hemolysis
- ④ **Platelet agglutination**
- ⑤ Coagulopathy
- ⑥ Nerve effect



Mamushi toxin

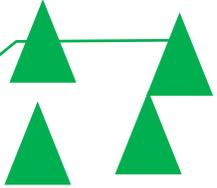
Diffusion

Agglutination



Platelet

Antitoxin serum

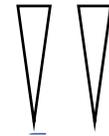
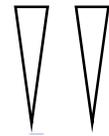
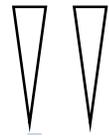
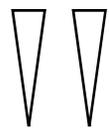
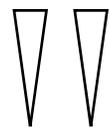


# Future prospect

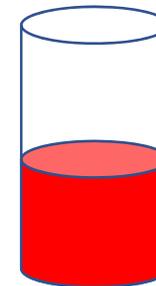
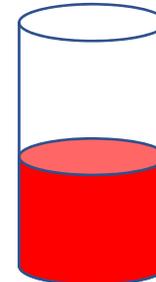
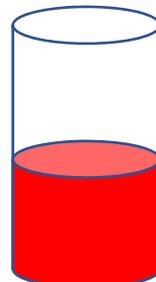
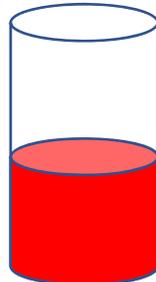
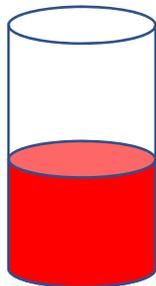
Mamushi toxin ↑↑



Plate aggregation ↑↑



Human blood sample



Size of plate aggregation

# Conclusion

- Mamushi bite

⇒ **Check platelets**

- Severe Mamushi bite

⇒ **Slight local symptoms**

- Systemic Mamushi poisoning

⇒ **Perform antitoxin serum injection**