

# CASE PRESENTATION

– ESIM 2016 –  
SARDINIA, ITALY

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# Case Presentation

## - History -

A 56 y.o. woman with a medical history significant for hypertension, hyperlipidemia and a recent diagnosis of mucin-producing Colon Adenocarcinoma [T4N1M1], s/p emergent sigmoidectomy due to perforation, presents to the ER with low grade fever.

Due to suspected bilateral shin cellulitis, she was empirically treated with numerous Abx in the rehab facility (Amoxicillin/Clavulanate, Ciprofloxacin, Clindamycin, Piperacillin/Tazobactam, Vancomycin) over the course of 12 days, but without improvement.

# Case Presentation

## - In the ER -

Hemodynamically stable, fever – 38.

Physical examination is notable for diffuse macular red rash covering the trunk, back, and four extremities with signs of epidermolysis on both shins.

Lab:

CBC: WBCs 6.7K [4.8K-10.8K], Hb 8.1 (normo), PLTs 240K [130K-400K].

Chem: Creat 1.72 [0.5-0.95], Urea 18 [17-43], LDH 590 [230-480], CRP 15 [0-0.5].

Urinalysis: No signs of UTI.

CXR: Normal.

Abdominal CT: Intact.

# Case Presentation

## - Problem List -

- FEVER
- DIFFUSE MACULAR RASH
- ACUTE KIDNEY INJURY
- MILDLY ELEVATED LDH

# Case Presentation

## - Follow-up -

Within a matter of few days, notwithstanding Abx (Clindamycin), fever continues to develop and rash worsens.

Blood Cultures: Negative.

**A decision is made to discontinue Abx.**

# Case Presentation

## - Follow-up -

Within a matter of few days, despite administering 6 liters of IV Normal Saline, patient becomes oliguric, renal functions exacerbate (creatinine 3.5 [0.5-0.95], urea 50 [17-43]).  
Also: LDH rises to 2100 [230-480]

# Case Presentation

## - Back to the Problem List -

- FEVER
- DIFFUSE MACULAR RASH
- ACUTE KIDNEY INJURY
- HIGHLY ELEVATED LDH

# Case Presentation

## - Back to the Problem List -

- FEVER
- DIFFUSE MACULAR RASH
- ACUTE KIDNEY INJURY
- ~~- HIGHLY ELEVATED LDH~~



# Case Presentation

## - Follow-up -

NEXT STEP:

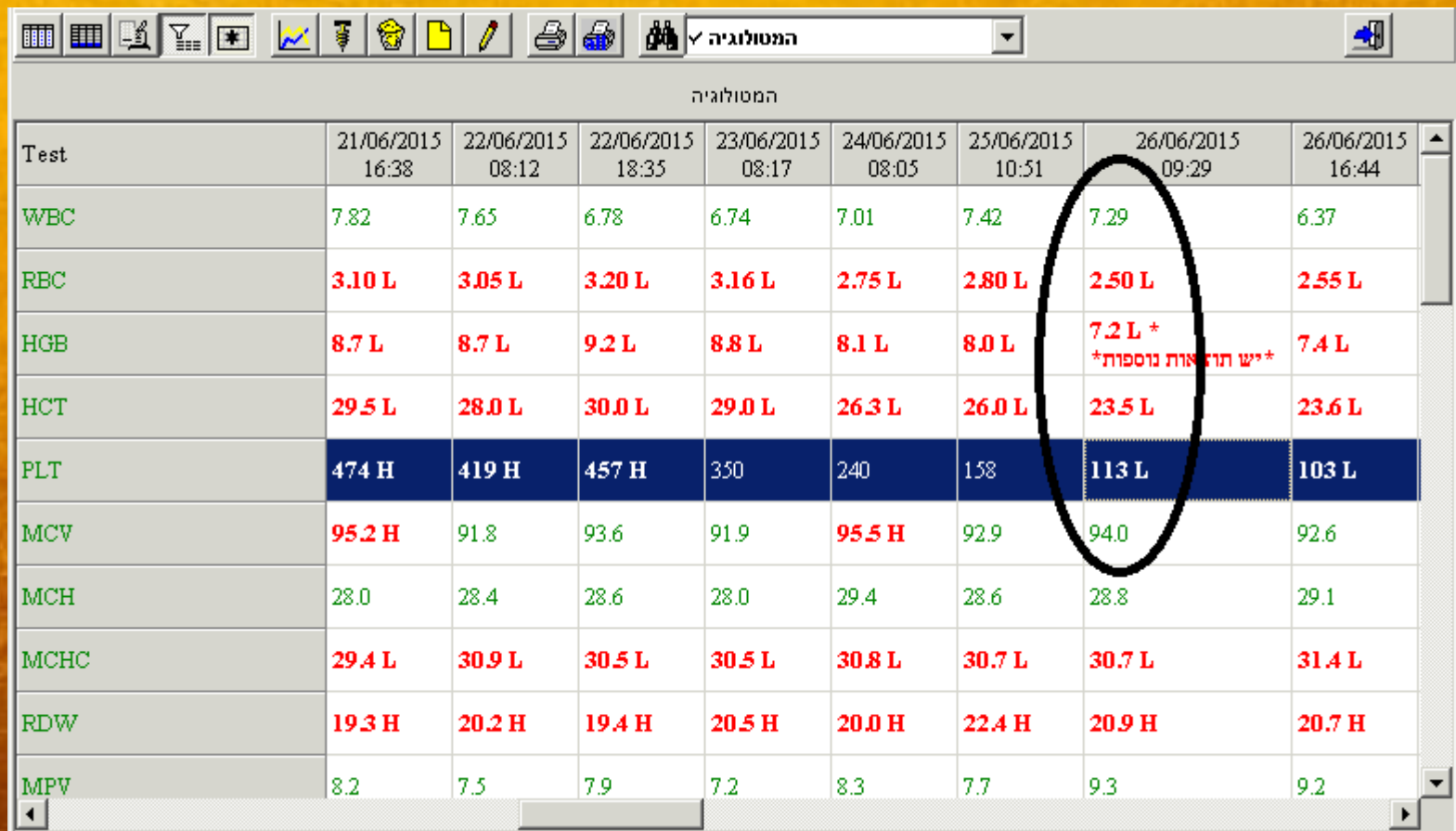
Urinary Sediment: WBC casts.

“ACUTE INTERSTITIAL NEPHRITIS” is suspected,  
**Steroid Tx is initiated.**

# Case Presentation

## - Establishing a Dx -

And then one bright Friday morning:



המטולוגיה

Test	21/06/2015 16:38	22/06/2015 08:12	22/06/2015 18:35	23/06/2015 08:17	24/06/2015 08:05	25/06/2015 10:51	26/06/2015 09:29	26/06/2015 16:44
WBC	7.82	7.65	6.78	6.74	7.01	7.42	7.29	6.37
RBC	3.10 L	3.05 L	3.20 L	3.16 L	2.75 L	2.80 L	2.50 L	2.55 L
HGB	8.7 L	8.7 L	9.2 L	8.8 L	8.1 L	8.0 L	7.2 L * *יש תוצאות נוספות*	7.4 L
HCT	29.5 L	28.0 L	30.0 L	29.0 L	26.3 L	26.0 L	23.5 L	23.6 L
PLT	474 H	419 H	457 H	350	240	158	113 L	103 L
MCV	95.2 H	91.8	93.6	91.9	95.5 H	92.9	94.0	92.6
MCH	28.0	28.4	28.6	28.0	29.4	28.6	28.8	29.1
MCHC	29.4 L	30.9 L	30.5 L	30.5 L	30.8 L	30.7 L	30.7 L	31.4 L
RDW	19.3 H	20.2 H	19.4 H	20.5 H	20.0 H	22.4 H	20.9 H	20.7 H
MPV	8.2	7.5	7.9	7.2	8.3	7.7	9.3	9.2



# Case Presentation

## - Updated Problem List -

- FEVER
- DIFFUSE MACULAR RASH
- ACUTE KIDNEY INJURY
- HIGHLY ELEVATED LDH
- ANEMIA
- THROMBOCYTOPENIA

# Case Presentation

## - Updated Problem List -

- FEVER
- ~~- DIFFUSE MACULAR RASH~~
- ACUTE KIDNEY INJURY
- HIGHLY ELEVATED LDH
- ANEMIA
- THROMBOCYTOPENIA

# Case Presentation

## - Establishing a Dx -

ביוכימיה

ביוכימיה

Test	24/06/2015 08:13	24/06/2015 08:16	25/06/2015 09:57	26/06/2015 09:21	26/06/2015 09:28	26/06/2015 13:43	28/06/2015 09:44	29/06/2015 08:42	30/06/2015 08:42
GPT [ALT]			9	8		8	14	13	12
GGT			38	37		35	80 H	84 H	69 H
LDH			2163 H	2353 H		2255 H	2326 H	2336 H	1246
CPK				40				74	
AMYLASE									
IRON									
TRANSFERRIN									
BILIRUBIN TOTAL			1.04	0.90		0.89	1.82 H	1.66 H	2.31 H
BILIRUBIN DIRECT									1.04 H
MAGNESIUM			2.10	2.00		2.10	2.30	2.20	2.20
SODIUM	144		141	133 L		128 L	133 L	138	139
POTASSIUM	4.4		4.5	4.8		5.3 H	5.4 H	4.7	4.0
CHLORIDE						91 L			
pH BLOOD		7.327 L			7.337 L				
pCO2		59.4 H			49.2 H				
TOTAL HEMOGLOBIN		6.1			9.6				
HCO3		28.20			24.20				
TCO2		59.40			49.20				

# Case Presentation

## - Establishing a Dx -

Test	26/06/2015 09:21	26/06/2015 09:41	28/06/2015 09:44	29/06/2015 08:42	30/06/2015 08:52	01/07/2015 08:37	02/07/2015 05:28	03/07/2015 08:04	06/07/2015 08:04
ANTISTREPTOLYSIN O									
C-REACTIVE PROTEIN	<b>15.40 H</b>		<b>8.19 H</b>	<b>4.76 H</b>	<b>3.97 H</b>		<b>2.93 H</b>	<b>1.53 H</b>	<b>4.25 H</b>
COMPLEMENT C3									
COMPLEMENT C4									
HAPTOGLOBIN	<b>&lt;10 L *</b>					<b>&lt;10 L *</b>			
ANTI GLOMER BAS MEMB		שתיגגי - 109							
HEPATITIS Bs Ag									
HEPATITIS C Ab									
c-ANCA		שתיגגי - 109							
p-ANCA		שתיגגי - 109							

# Case Presentation

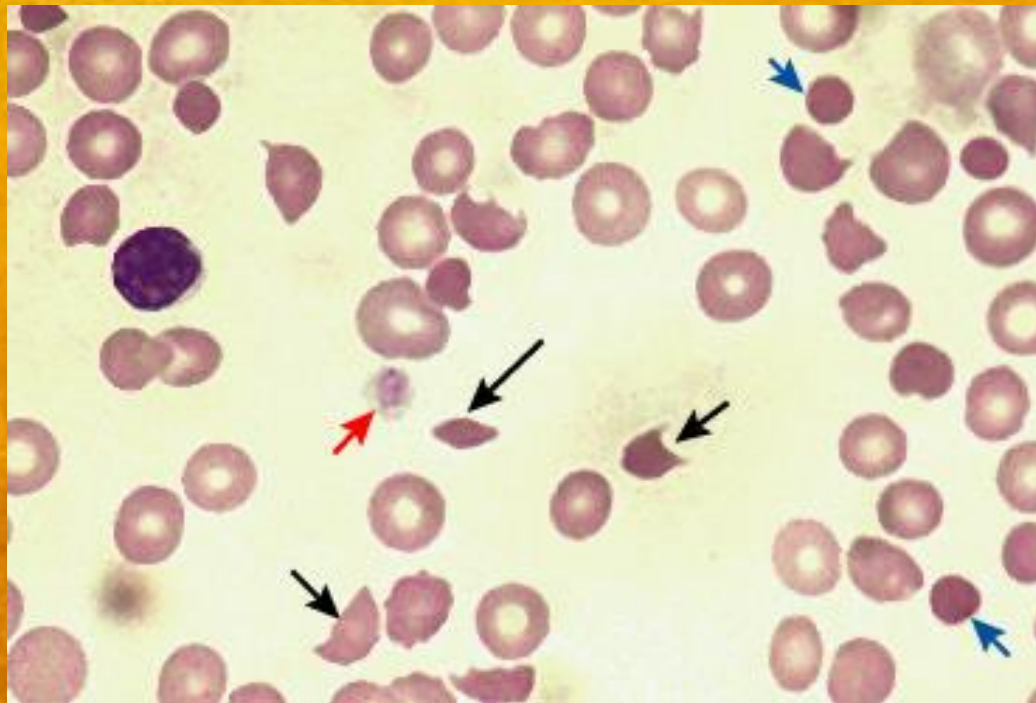
## - Establishing a Dx -

Test	15/05/2015 12:28	15/05/2015 12:29	26/06/2015 12:37	26/06/2015 16:45	30/06/2015 08:27	03/07/2015 15:46	10/07/2015 12:55	17/07/2015 08:10
ABO Type	A	A		A	A	A	A	A
Rh Type	POS	POS		POS	POS	POS	POS	POS
Antibody screen Fin	שלייל	שלייל		שלייל	שלייל	שלייל	שלייל	שלייל
DCT Gel Final calc			שלייל					



# Case Presentation

## - Establishing a Dx -



# Case Presentation

## - Establishing a Dx -

Print... 100% 35/35 Back Forward

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

12 תוצאות פרופיל: כללית - מעבדות חוץ

** שם בדיקה	גורם שולח מעבדה	פנימית ב כרמ כרמל						
	מעבדה אחרונה	25/06/2015 08:24						
ADAMTS		נשלח לרמב"ם קרי						

16 תוצאות פרופיל: כללית - סרולוגיה זהומית

** שם בדיקה	גורם שולח מעבדה	פנימית ב כרמ כרמל	פנימית ב כרמ כרמל					
	טוח על פי מעבדה אחרונה	25/06/2015 10:56	25/06/2015 09:57					
HEPATITIS Bs Ag		שלילי						
HEPATITIS C Ab		שלילי						
ANTISTREPTOLYSIN O	200.0 IU/ml		826.5					

# Case Presentation

## - Establishing a Dx -

**A Diagnosis of TTP is made.**

On the following days:

**Patient undergoes dialysis.**

**Patient is started on Plasma Exchange Therapy.**

# Case Presentation

## - Follow-up -

Test	27/06/2015 13:15	28/06/2015 13:23	29/06/2015 08:19	30/06/2015 08:27	01/07/2015 06:42	02/07/2015 05:43	03/07/2015 08:21	04/07/2015 09:49	05/07/2015 08:09	05/07/2015 20:01
WBC	6.81	9.39	8.58	9.06	7.02	5.48	6.37	7.66	7.24	9.31
RBC	<b>2.16 L</b>	<b>2.71 L</b>	<b>2.41 L</b>	<b>2.80 L</b>	<b>2.62 L</b>	<b>2.70 L</b>	<b>2.62 L</b>	<b>2.64 L</b>	<b>2.69 L</b>	<b>2.98 L</b>
HGB	<b>6.3 L</b>	<b>8.0 L</b>	<b>7.1 L</b>	<b>8.2 L</b>	<b>7.9 L</b>	<b>8.2 L</b>	<b>7.7 L</b>	<b>8.0 L</b>	<b>7.9 L</b>	<b>8.8 L</b>
HCT	<b>19.9 L</b>	<b>25.2 L</b>	<b>22.6 L</b>	<b>25.8 L</b>	<b>24.5 L</b>	<b>25.1 L</b>	<b>24.7 L</b>	<b>24.7 L</b>	<b>25.0 L</b>	<b>27.6 L</b>
PLT	<b>90 L</b>	<b>85 L</b>	<b>58 L</b>	<b>38 L</b>	<b>56 L</b>	<b>57 L</b>	<b>64 L</b>	<b>67 L</b>	<b>68 L</b>	<b>62 L</b>
MCV	92.2	92.9	93.7	92.3	93.7	92.8	<b>94.5 H</b>	93.5	93.0	92.9
MCH	29.1	29.4	29.6	29.5	30.4	30.2	29.3	30.4	29.2	29.5
MCHC	<b>31.6 L</b>	<b>31.6 L</b>	<b>31.6 L</b>	<b>31.9 L</b>	<b>32.4 L</b>	<b>32.6 L</b>	<b>31.1 L</b>	<b>32.5 L</b>	<b>31.4 L</b>	<b>31.8 L</b>
RDW	<b>21.4 H</b>	<b>21.6 H</b>	<b>22.0 H</b>	<b>22.3 H</b>	<b>21.4 H</b>	<b>20.4 H</b>	<b>19.7 H</b>	<b>19.0 H</b>	<b>19.5 H</b>	<b>18.3 H</b>
MPV	11.1	11.1	7.8	<b>6.8 L</b>	<b>11.4 H</b>	<b>12.8 H</b>	10.9	<b>12.0 H</b>	9.0	10.6

# Case Presentation

## - Follow-up -

### FAST-FORWARD:

Test	14/07/2015 07:56	15/07/2015 10:53	15/07/2015 11:02	16/07/2015 07:35	16/07/2015 16:39	17/07/2015 08:21	18/07/2015 08:31	19/07/2015 09:22	20/07/2015 07:36
WBC	6.30	6.07	6.08	4.60 L	4.70 L	4.64 L	4.68 L	4.72 L	5.22
RBC	2.48 L	2.64 L	2.54 L	2.42 L	2.29 L	2.26 L	2.68 L	2.87 L	2.60 L
HGB	7.4 L	7.6 L	7.7 L	7.0 L	6.8 L	6.8 L	7.9 L	8.4 L	7.4 L
HCT	22.7 L	24.4 L	24.0 L	22.4 L	21.4 L	21.3 L	24.5 L	23.8 L	23.8 L
PLT	81 L	98 L	94 L	89 L	91 L	106 L	106 L	100 L	95 L * *יש להתייחס לנתונים נוספים*
MCV	91.4	92.4	94.7 H	92.4	93.4	94.0	91.5	90.6	91.5
MCH	29.7	28.8	30.2	28.8	29.9	30.0	29.5	29.1	28.4
MCHC	32.5 L	31.1 L	31.9 L	31.2 L	32.0 L	31.9 L	32.2 L	32.1 L	31.1 L
RDW	17.4 H	17.4 H	16.3 H	17.3 H	16.2 H	16.5 H	17.3 H	17.7 H	17.8 H
MPV	8.5	8.1	9.4	8.1	9.7	9.3	8.9	7.8	8.4

# Case Presentation

## - Response to Tx -

Eventually:

Patient became independent of dialysis.

Urine-output was back to normal.

Fever resolved.

Creatinine → 2.5 [0.5-0.95]

LDH → 700 [230-480]

CRP → 1 [0-0.5]

ADAMTS13 came back intact.

**Patient was discharged home after 40 days.**

# Case Presentation

## - Learning Points -

- 1) If you can't make a Dx out of your problem list, try ruling out one or two problems or try to identify more problems.
- 2) Even “normal” values can be abnormal – sometimes, the direction, and not the absolute number, is what matters.

# THANK YOU ALL





# TTP-HUS

The term thrombotic thrombocytopenic purpura-hemolytic uremic syndrome (TTP-HUS) describes acute syndromes with abnormalities in multiple organ systems (CNS, Renal, Cardiac).

Despite many differences with the TTP-HUS syndromes, the presenting cardinal features are similar in all patients: **thrombocytopenia and microangiopathic hemolytic anemia without other apparent cause.**

# TTP-HUS

In some patients, neurologic abnormalities are dominant and acute renal failure is minimal or not present; these patients are considered by to represent classical or "idiopathic" TTP, typically associated with severely deficient ADAMTS13 activity.

In other patients, acute renal failure is dominant and neurologic abnormalities are minimal or absent; these patients are considered to represent HUS.

# TTP-HUS

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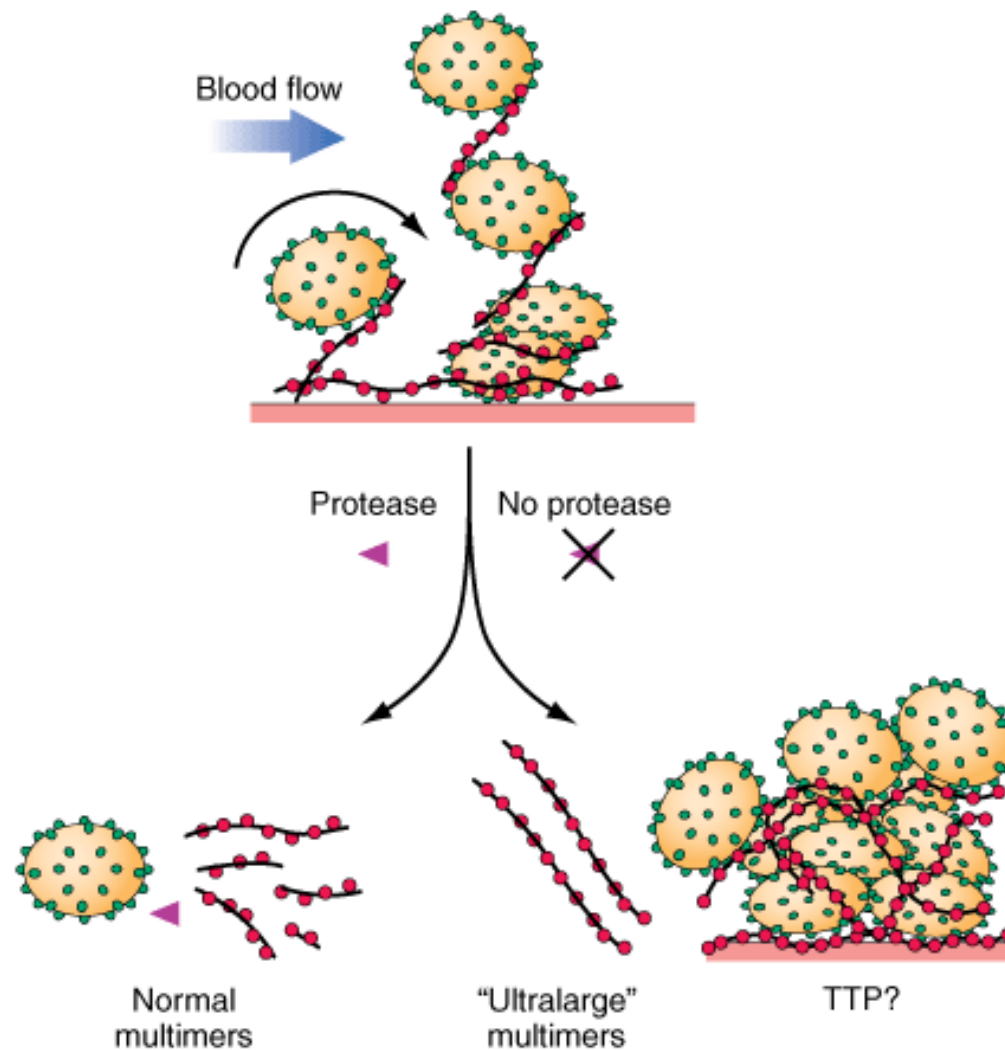
# TTP-HUS

## - Epidemiology -

Four to six cases per million per year (USA).  
More prevalent in women and in blacks.

# TTP-HUS

## - Pathogenesis -



# TTP-HUS

## - Pathogenesis -

### **Reduced ADAMTS13 activity**

ADAMTS13\* mutation leads sequentially to reduced ADAMTS13 activity, the accumulation of ULVWf multimers, platelet aggregation, and formation of the platelet thrombi that are characteristic of the disease.

\* A Disintegrin And Metalloprotease with a ThromboSpondin type 1 motif, member 13

# TTP-HUS

## - Pathogenesis -

### **Antibody to ADAMTS13**

An inhibitory autoantibody (often IgG) to the ADAMTS13 metalloproteinase has been found at varying titers among a high percentage of patients with Acquired Idiopathic TTP who have severely deficient ADAMTS13 activity.