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Time to first plasma exchange in TTP – a regional Scottish experience

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INTRODUCTION

- Acquired thrombotic thrombocytopenic purpura (aTTP) is a rare disorder
- Caused by development of antibodies against the von Willebrand factor (VWF) cleaving protein ADAMTS13
- **Low** index of suspicion needed
- Untreated mortality is **high**
- Treatment with plasma exchange (PEX), preferably within 4-8 hours regardless of time of day of presentation.
- Early deaths (within first 24 hours) do still occur

AIMS

- To report the real-world experience of PEX to support suspected TTP across two of the three Scottish National Blood Transfusion (SNBTS) centres – Edinburgh and Glasgow – that provide centrifugal apheresis.
- Performed as part of a review of apheresis service provision by SNBTS in Scotland
- Due to Scotland's geography (most of the population based in and around four cities) and low population density (70 per square kilometre), patients may have to travel considerable distances to their nearest apheresis centre (**Figure 1**)
- To report time taken to 1st plasma exchange from time of referral, whether TTP was subsequently confirmed, patient outcome, length of hospital stay and causes of delay (if present) to first plasma exchange

METHOD

- SNBTS Therapeutic Apheresis Registry (STAR) was used to identify all cases of patients who were urgently referred for PEX in Edinburgh or Glasgow for suspected TTP
- Reference period start May 2019 to end April 2021
- **27 patients** received plasma exchange for suspected TTP
- Clinical details, including patient demographics, time taken from initial referral to first PEX, and patient outcomes were obtained from hospital electronic records (**Table 1**)

REFERENCES

Scully M, Hunt BJ, Benjamin S, Liesner R, Rose P, Peyvandi F, Cheung B, Machin SJ; British Committee for Standards in Haematology. Guidelines on the diagnosis and management of thrombotic thrombocytopenic purpura and other thrombotic microangiopathies. Br J Haematol. 2012 Aug;158(3):323-35. doi: 10.1111/j.1365-2141.2012.09167.x. Epub 2012 May 25. PMID: 22624596.

RESULTS

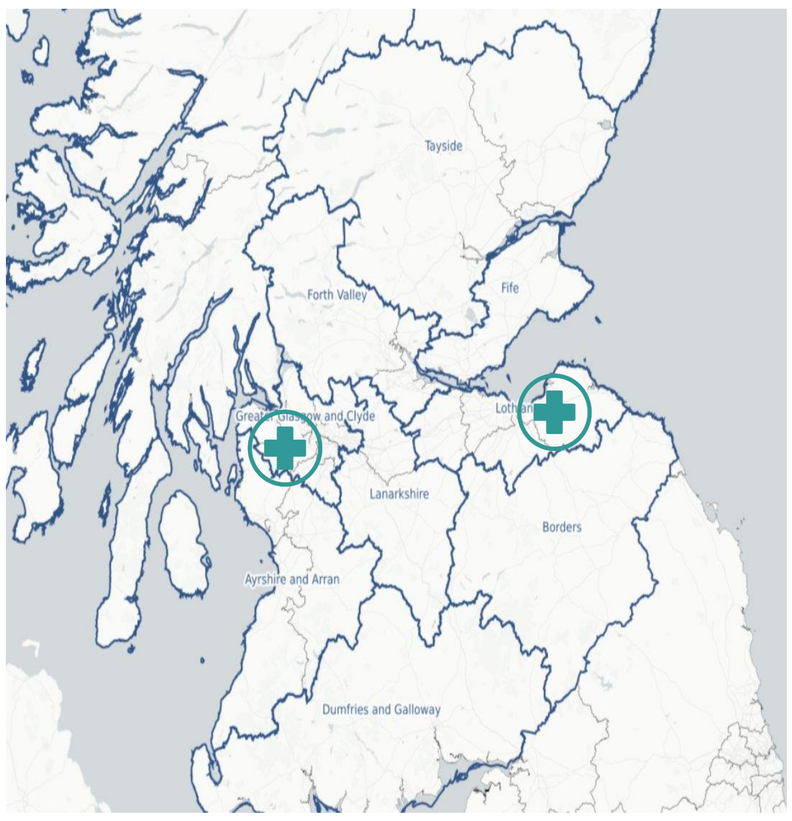

FIGURE 1

TABLE 1

Demographics	
Gender (M:F)	11:16
Mean age (range) (years)	54 (8-86)
TTP confirmed	13 (12 acquired, 1 congenital)
Location	
Lothian	7
Greater Glasgow and Clyde (GGC)	8
Lanarkshire	6
Tayside	3
Forth Valley	1
Ayrshire and Arran	1
Mean time to 1st PEX	
Health board with apheresis unit (GGC, Lothian)	4 hours 16 minutes
Health board without apheresis unit (all others)	8 hours 46 minutes
P value	0.017
Mean Hospital Stay (days)	
Health board with apheresis unit (GGC, Lothian)	22.7 days
Health board without apheresis unit (all others)	26 days
P value	0.83

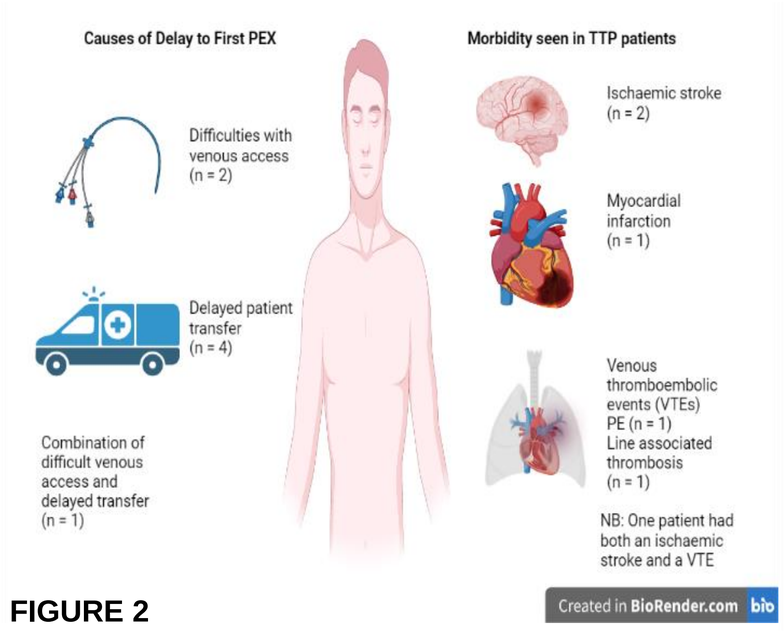

FIGURE 2

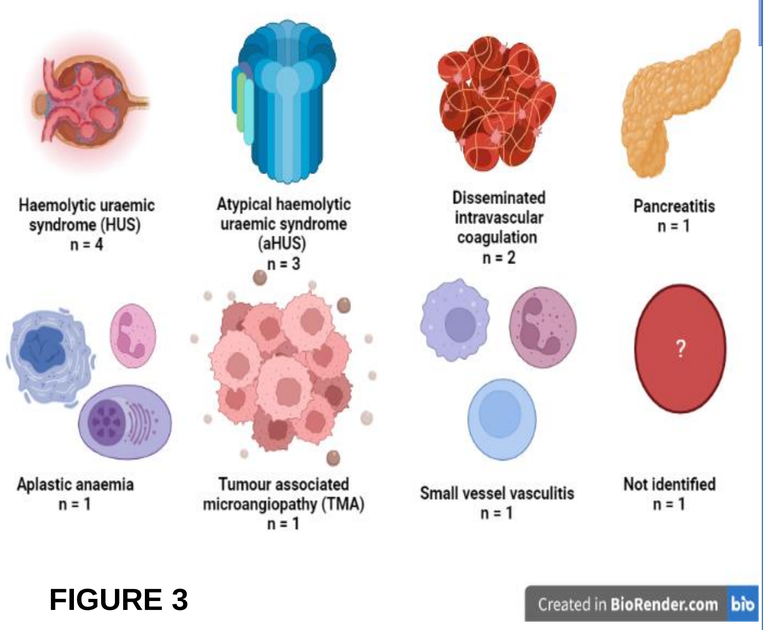

FIGURE 3

CONCLUSIONS

- **Significant difference** in time to first PEX between those who received PEX for TTP in a health board that had an apheresis unit (Greater Glasgow and Clyde, and Lothian) when compared to those that required patient transfer (Tayside, Forth Valley, Lanarkshire, Ayrshire and Arran)
- **No significant difference** in mean duration of stay between those who received PEX within a health board that hosts an apheresis unit and those who were transferred
- Causes of delay to PEX are summarised in **Figure 2**
- Of the **TTP cases,** morbidity was seen in four patients although **all patients survived** (**Figure 2**)
- The underlying diagnoses in the patients who received plasma exchange who had TTP refuted (with normal ADAMTS13 levels) are summarised in **Figure 3**. Death was seen in four of these patients

KEY

Figure 1: Map of Scotland highlighting the sites of the two SNBTS centres (highlighted by green cross) and the various health boards that the centres are responsible for providing apheresis cover to.
Figure 2: Graphic depicting causes of delay to 1st PEX and morbidity seen in TTP patients
Figure 3: Graphic highlighting the underlying diagnoses in patients who received PEX but subsequently TTP was refuted
Table 1: Patient demographics

ACKNOWLEDGEMENT

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Figures 2 and 3 were created with BioRender.

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