Strategies to Minimising Transfusion

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Setting the Scene

- Around 22.00hrs at night in AE
- Waiting time in minors was over 2 hours
- All Patients had been triaged by a senior nurse.
- Our patient had been waiting the longest.

Our Patient

- 71 year old male with his son.
- Walked into the room and on initial impressions looked well with no cognitive impairment.
- Apologised for his presence in A&E.

Presenting Complaint

- HEADACHE
- HPC – 5 day history of headache
- Described the headache as heavy and behind both eyes
- It got worse throughout the day
- Pain was 8/10, but almost came in waves and was worse tonight

Presenting Complaint

- No radiation of the pain and no associated nausea or vomiting.
- Patient felt as if he had a cold
- No change in vision
- No head injury
- Felt a little stressed as wife currently in hospital

Previous Medical History

- Rate controlled atrial fibrillation
- Glaucoma
- Hypertension
- Gastro oesophageal reflux
- Hypothyroidism

Drug History

- NKDA
- **Warfarin - 4mg**
- Ranitidine – 150mg
- Bendrofl umethiazide -2.5mg
- Diltiazem – 60mg
- Levothyroxine -100mcg

Social History

- Currently home alone as wife was in hospital due to fast atrial fibrillation
- Son was near by
- Ex smoker gave up ten years ago - 20 a day
- Occasional alcohol
- Fully independent

His Son's Impression

- His father was not himself.
- Was a little forgetful
- Sounded drunk on the phone
- Was disproportionately stressed regarding his wife's recent admission to hospital

On examination

- Patient appeared relatively well no obvious confusion

- BP= 138/82
- HR= 82 irr
- RR=19
- T=36
- Sats=97% on air

On examination

- Normal respiratory examination.
- Cardiac – Rate controlled AF at 82, with normal heart sounds and a warm well perfused patient
- Normal abdominal examination
- MMT – 10/10

Neuro Examination

- Power 5/5 throughout
- Reflexes intact
- Normal sensation and tone
- ? Bilateral up going plantars
- No cerebellar signs

Investigations and current treatment

- Bloods including FBC, U&E, LFTs, CRP, clotting screen, including INR.

- Simple analgesia for headache.
  - vomit in the consultation room 20 minutes after codeine for analgesia

Impression and Differential

Patient appeared normal

Was this a normal patient?

Was this a patient who did not want to be a burden and played down his symptoms.

Or differential diagnosis :Sinusitis, normal headache, migraine, space occupying lesion or intracranial bleed due to warfarin therapy.

Decision made to CT head to rule out intracranial bleed

Results

- INR = 4.1
- Activated partial thromboplastin time ratio of 1.69
- CT head =large right-sided acute or chronic subdural haematoma with a maximum depth of 1.9 cm, occupying the frontal, parietal and temporal convexities.

Ct head


Se:2
Im:16
[AH]
Study Date:23/05/2010
Study Time:00:47:39
MRN:
[R]
[L]
[PF]
C35
W100

Ct head


Se:2
Im:17
[AH]
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[L]
[PF]
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W100

Management

- Move patient out of minors to Resus!
- Discussed with locum reg who advised discuss with kings neurosurgery and give FFP.
- Discussed with kings and images sent

The Lab

- FFP requested
- BMS challenged the request suggesting use of PCC and DW Haematologist.
- Consultant Haematologist was contacted
  - Lab were phoned back and told the magic stuff that would do the job was authorised!!
- Beriplex was then given in conjunction with vit K

What Happened to Our Patient?

- Blue lighted to Kings for neurosurgical drainage.
- Patients INR prior to surgery was 1.0
- Patient came back 3 days later to visit his wife and walked into AE to thank the staff

Get the Right Tool for the Job!

Weigh up the options!

Beriplex Versus FFP

Guidelines

Guidelines for the use of fresh-frozen plasma, cryoprecipitate and cryosupernatanL: 2004 The British Society for Haematology, 126, 11-28

Reversal of warfarin effect (Section 10.6)

Over-anticoagulation from excessive effects of warfarin should be managed according to the British Committee for Standards in Haematology Guidelines (BCSH, 1998). FFP has only a partial effect, is not the optimal treatment, and should never be used for the reversal of warfarin anticoagulation in the absence of severe bleeding (grade B recommendation, level IIa evidence).

Guidelines

10.6. Reversal of warfarin effect (see BCSH, 1990b; BCSH, 1998; Baglin, 1998; Makris & Watson, 2001)

Warfarin achieves its anticoagulant effect by inhibiting the vitamin K-facilitated carboxylation of FII, FVII, FIX and FX. It thereby causes a functional deficiency of these procoagulants as well as of the anticoagulants proteins C and S. Warfarin's anticoagulant effects may be indicated by prolongation of the PT standardized by the international normalized ratio (INR). Target INRs for different thrombotic indications are given in BCSH (1998).

Over-anticoagulation from excessive effects of warfarin can be reversed by a range of measures. From the most mild to the most severe circumstances these are: withdrawing warfarin, giving vitamin K orally or parenterally (e.g. 5 mg by slow intravenous injection; grade B recommendation, level III evidence); transfusing FFP, or transfusing PCC (FII, FVII, FIX and FX, or separate infusions of FII, FIX and FX concentrate and FVII concentrate). PCC (50 units/kg) is preferred to FFP.

Guidelines BNF

- Patients on warfarin who require emergency surgery that can be delayed for 6-12 hours can be given intravenous phytomenadione (vitamin K1) 5 mg to reverse the anticoagulant effect. If surgery cannot be delayed, dried prothrombin complex (e.g. 25 units/kg) can be given in addition to intravenous phytomenadione (vitamin K1) and the INR checked before surgery.

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Beriplex Versus FFP

- Beriplex = prothrombin complex concentrate
- Derived from pooled human plasma
- Contains the vitamin K-dependent coagulation factors II, VII, IX and X, and vitamin K-dependent coagulation inhibition proteins C and S.
- Beriplex enhances the coagulation mechanisms.
- Effective after 30 minutes and its effects will persist for approximately 6 – 8 hours.
- Administration of simultaneous Vit K is effective after 4 – 6 hours. Therefore repeated treatment with beriplex is not necessary.

Beriplex Versus FFP

- FFP contains insufficient amounts of factors II, VII, IX and X to achieve physiological correction of anticoagulation.
- After infusion of 15ml/kg of FFP, clotting factor levels typically remain below 20%.
  - 30ml/kg is a more haemostatic dose.
- The volume for a 70kg patient is 1050ml (4 units) Large volume – especially for cardiac patients

Beriplex Versus FFP

- FFP has to be blood group specific unlike beriplex
- FFP is Thawed – this may incur a delay in administration
- Beriplex is made up in a couple of minutes
- FFP Small risk of virus transfer
- FFP Small risk of transmission of blood-borne pathogens

Cost

- Standard UK FFP £27.46 per unit

- Vitamin K roughly 40p per injection
- Beriplex £160 per vial

Cost is it Just Financial

- NO
- Appropriate treatment
  - Ensuring the quality of life for the patient
  - Quality of life for people who could potentially become carers
- Cost of ongoing treatment such as long term care or rehab
- All of the above outweigh the cost of the beriplex
  - Not only appropriate but the cheapest option in the long term

Take home message

- Never be afraid to challenge or suggest an alternative
- To Challenge takes confidence
  - If in doubt refer to a senior colleague

- Your challenge can make a difference!

"I was told receiving that stuff you gave me so quickly made all the difference I would have a very different outcome if you hadn't treated me so promptly"

Thank you

Dr Yun Wong for allowing me to use his case study