

Case Conference

Supervisor: VS 吳柏衡

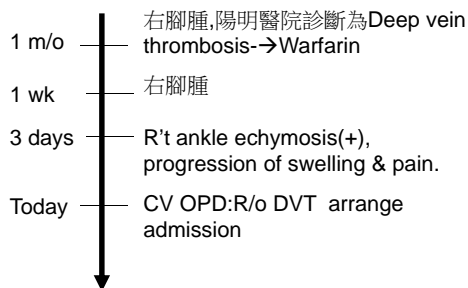
Presenter: R1 陳穎玲

101.10.02

Basic Information

- 85 y/o female
- Time: DAY1 15:19
- Sent by 家人
- Vital signs: T/P/R:36.5/98/20 BP:139/59mmHg
- GCS: E4V5M6
- 檢傷主訴: 右腳腫1個月
- Triage: II

Present Illness



Right Leg Swelling



Present history

- Dyspnea (-)
 - Chest pain (-)
 - Trauma history(-)
 - Fever(-)
-
- Initial Diagnosis: Right leg deep vein thrombosis

Past Medical History

1. Coronary artery disease
2. Type 2 Diabetes Mellitus
3. Hypertension
4. Gout

Under treatment in Yang Ming Hospital

Order

- CBC/DC
- Panel I
- PT, aPTT
- N/S 40cc /hr run
- EKG, CXR(p)
- Leg duplex
- Morphine 4mg iv st
- Clexane 60mg sc Q12H
- 排 CV admission

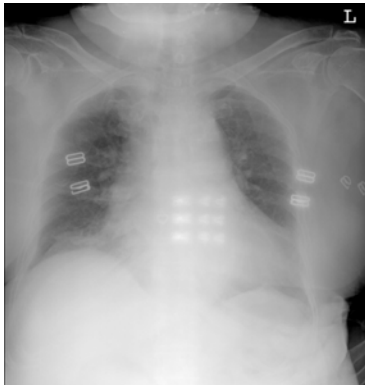
Lab

檢驗項目名稱	檢驗值	檢驗值單位
CBC/Platelet/DC	*****	
WBC	7.0	X1000/ul
RBC	3.31	million
Hb	10.6	gm/dl
Ht	32.2	%
MCV	97.3	fl
MCH	32.0	pg
MCHC	32.9	%
RDW	14.6	%
Platelet	183	x1000/ul
Differential count	*****	
Segmented Neutro.	60.2	%
Lymphocyte	26.9	%
Monocyte	8.9	%
Eosinophil	3.9	%
Basophil	0.1	%

Glucose	164	mg/dL
GOT(AST)	16	U/L
BUN	38	mg/dL
Creatinine	1.4	mg/dL
Na	148	meq/L
K	4.6	meq/L
eGFR	35.74	

PT	69.2	second
Normal control	10.5	second
INR	6.97	Ratio
APTT	89.8	second
Normal control	32.8	second

CXR



EKG



Duplex, lower limbs

右側	Thrombus	Compressibility	Augmentaion
Common femoral v.	-	+	+
Superficial femoral v.	-	+	+
Deep femoral v.	-	+	+
Popliteal v.	-	+	+

左側	Thrombus	Compressibility	Augmentaion
Common femoral v.	-	+	+
Superficial femoral v.	-	+	+
Deep femoral v.	-	+	+
Popliteal v.	-	+	+

16:55

- DC clexane
- Hb,PT/APTT coming morning
- 轉EC

評估目前病人no active bleeding,no ecchymosis.
Suggest Hold Warfarin for 1 day.

EC Order

- Consult PS
- CK, 備血
- NPO

CPK	60	U/L
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PS consultation 20:55

- Pain(+)
- Pulseless(-) :Dorsalis pedis artery可摸到
- Numbness(-)
- Paralysis(-)
- Calf swelling,tense

Suggestion: compartment syndrome cant be rule out.

DAY2 Operative finding

- Monitor BT/HR/SpO2 Q15min
- Ramsay Score Q30min
- Coma scale/pupil size and light reflex Q30min
- Agonal reflex Q30min
- Record I/O Q1H
- Record suction reflex every time of suction at least Q2H
- Blood glucose Q2H
- EtCO₂ Q6H

Operative Note

- COMPARTMENT SYNDROME with coagulopathy, with muscle hematoma.
- Fasciotomy was done.

Discussion:

Compartment syndrome

Common site: *Leg , forearm*

Risk Factors:

1. Trauma: *Long bone fracture, burn*
2. Nontraumatic cause:

Ischemia-reperfusion injury, coagulopathy, certain animal bites, extravasation of IV fluids, injection of recreational drugs

Uptodate: Acute compartment syndrome of the extremities
Literature review current through: Aug 2012. | last updated: 三月 7, 2012.

Compartment syndrome

Classic signs:

pain, pallor, pulselessness, paresthasias, paralysis

Lab: no contributable

Diagnosis

- Normal pressure of tissue compartment : 0 ~ 8 mmHg.
- ACS
delta pressure = diastolic blood pressure – measured compartment pressure
- *delta pressure <20 to 30 mmHg indicates need for fasciotomy*



Immediate management

- Remove any dressing, splint, cast,
- Placing the limb level with the heart.

Warfarin overdose treatment

American Heart Association Foundation to Warfarin therapy
Circulation 2003
Tintinalli Seven edition

INR & Risk of bleeding

INR > 4 : increases bleeding risk

INR > 5: Rise sharply

Approach to Warfarin overdose

- 1st: Stop warfarin
- 2nd: Administer vitamin K 1
- 3rd: Administer Fresh plasma /prothrombin concentrate.

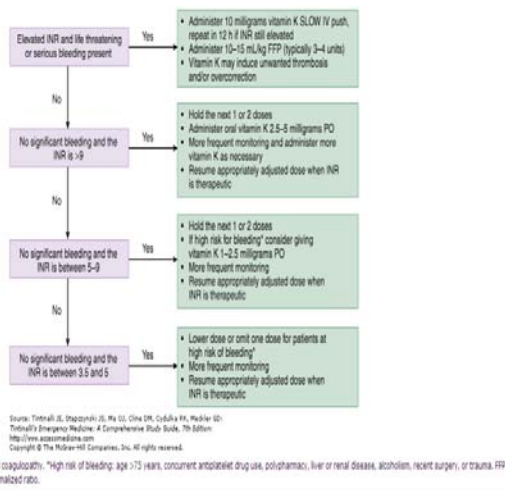
Management

- 1. INR < 5, no clinically bleeding → next dose omitted & resumed in lower dose when INR reaches therapeutic level.
- 2. INR : 5 ~9, no bleeding, no risk factors → next 1 / 2 doses of warfarin omitted & resumed in lower dose when INR reaches therapeutic level.

Risk factor(+) → vitamin K₁ (1 to 2.5 mg) orally.

Management

- 3. INR > 9, no clinical bleeding → vitamin K₁, 3 to 5 mg orally, INR will fall within 24 to 48 hours.
- 4. Serious bleeding /major warfarin overdose → Vit K₁ intravenous infusion 10 mg + fresh plasma /prothrombin complex concentrate +/- Vit K₁ Q₁₂H.
- 5. Life-threatening bleeding → prothrombin complex concentrate replacement +iv 10 mg of vitamin K₁



Use of Vitamin K1

1. Route: intravenously, subcutaneously, orally.
2. Intravenous injection :anaphylactic reactions, Warfarin resistance
3. Subcutaneous vitamin K₁ :unpredictable ,sometimes delayed.

Use of Vitamin K1

1. Oral administration is predictably effective .
2. Vitamin K₁, 1 mg to 2.5 mg orally →more rapidly lowers INR to 5 within 24 hours
3. INR :4 ~10 →Oral vitamin K₁, 1.0 to 2.5 mg
INR:10 → 5 mg

Abdominal compartment syndrome due to warfarin-related retroperitoneal hematoma

A 49-year-old female patient was admitted to hospital complaining of progressive and severe abdominal pain for the past 3 days. She had been taking warfarin due to a prior diagnosis of deep venous thrombosis of the lower extremities. Upon admission her abdomen was mildly distended, her intravesical pressure (IVP) was 45 cm H₂O and her blood pressure (initially 70/40 mmHg) rose to 110/80 mmHg after rapid administration of 100ml of saline solution. The blood count ordered upon her arrival showed a hemoglobin level of 4.1g/dL and an international normalized ratio (INR) of 4.4. CT of the abdomen and pelvis showed a large retroperitoneal and pelvic hematoma [Figure 1]. Initially, a conservative approach was adopted: the patient received 1200ml of packed red cells (PRC), 1000ml of fresh frozen plasma and 3500ml of crystalloid solution. However, after the first 12 hours of observation she developed oliguria, seizures, shock and respiratory failure. Serial physical examinations revealed marked abdominal distension and IVP rose to 60cm H₂O. The clinical picture resembled abdominal compartment syndrome (ACS) and a decision for decompressive laparotomy was made

Compartment syndrome in upper arm in anticoagulant therapy after minor trauma

Compartment syndrome can be a complication of warfarin treatment after a minor trauma. We report a case of an elderly woman who had an uncontrolled, high Internationalised Normalized Ratio (INR) level and had incurred a large haematoma on the left upper arm after a fall. After two days, the patient developed a massive oedema and clinical compartment syndrome. It is essential to be aware of symptoms and signs of compartment ischaemia, as early fasciotomy can prevent late complications such as muscle necrosis and contracture or at worst amputation. The patient should be hospitalized for observation for compartment syndrome and control of the INR level

[Ugeskr Laeger](#). 2010 Aug 2;172(31):2149-50.

Spontaneous compartment syndrome in a patient on long-term anticoagulation.

The case is reported of a 35-year-old lady on long-term anticoagulation with warfarin who developed a spontaneous acute compartment syndrome in the forearm. Despite a delay in diagnosis, an extensive decompression resulted in complete recovery.

[Hand Surg Br](#). 1993 Feb;18(1):41-2.
Griffiths D, Jones DH.

Anticoagulant-induced intramural intestinal hematoma: report of three cases and literature review

Spontaneous intestinal hematoma is a rare complication of anticoagulant therapy. The authors reported three cases of intramural and submucosal small bowel hematoma resulting from warfarin administration. The first patient presented with abdominal pain, had intramural hematoma at jejunum, the most common site of intramural small bowel hematoma. Another patient who had submucosal duodenal hematoma presented with massive upper gastrointestinal bleeding, a rare manifestation of small bowel hematoma. The third patient presented with intramural ileal hematoma that caused abdominal pain and palpable mass after a short period of warfarin therapy. Typical findings on abdominal computerized tomography yielded the diagnosis. All patients rapidly improved after conservative treatment.

[J Med Assoc Thai](#). 2008 Aug;91(8):1285-90.

[Spontaneous intramural hematoma of the small bowel due to use of oral anticoagulants: case report and review of the literature].

We describe a case of 78 year-old woman under anticoagulant therapy who presented abdominal pain, nausea, vomiting and an elevated prothrombin time levels (INR = 9.03). The ultrasound and abdominal CT showed a thickened small bowel wall mainly involving duodenum and jejunum. The endoscopy showed an ecchymotic aspect of duodenum and jejunum.

[Rev Gastroenterol Peru](#). 2010 Apr-Jun;30(2):158-62.

Take Home Message

- INR >4 →bleeding risk ↑
- Management of prolonged INR

Thanks for attention