Acute Vasculaire Geneeskunde

Snapper 2018

- Heel hoge bloeddruk (Yvo S)
- Diagnostiek LE (Yvo S)
- Antistolling/DOAC-dingetjes (Carianne V)

- Vignetten
- Vasculaire Vragen...

Vignet 1

- Man, 36 jaar
- Ischemische ulcera handen

  a) welke ziekte heeft deze patient?
  b) Wat is de beste behandeling?

Case I

- 58 female
- Known hypertension, poor compliance
- Vomiting, confusion, seizure → ER

- Vitals: BP 240/138 mmHg, HR 98 bpm, disoriented, E4M4V3.

- Any suggestions?
- Who would first run a few tests?
Guideline Definitions

- **severe hypertension** (usually >200/120 mmHg) and
- Acute, stable or progressive damage to brain, heart, kidneys, large arteries or retina.

- **Emergency:** BP lowering within minutes...
- **Urgency:** BP lowering within hours...
  depending on signs of acute target organ damage

Acute hypertensive organ damage

- **IB:** Bleeding, Cotton wool spots
- **IV:** Papillary edema
- Bilateral (retinal vein thrombosis?)
- HYPERTENSIVE ENCEPHALOPATHY:
  - Edema, micro-infarcts, micro-bleeds
  - PRES: Posterior Reversible Encephalopathy Syndrome
  - CT or, preferably, MRI.
- Drowsiness, seizures, confusion, vomiting, coma
  Not (necessarily): headache
- Renal insufficiency, Erythrocytura, RBC-casts, (moderate) proteinuria

**MALIGNANT HYPERTENSION**

- Anemia, low platelets, elevated LDH, schistocytes

MAHA: Micro-Angiopathic Hemolytic Anemia

Keith, Wagener, Barker, Am Med Sci 1939
Heart & Large arteries: cause & consequence of severe hypertension

Controversy: Not all acute organ damage constitutes ‘emergency’

- ‘True emergencies’ (BP lowered < minutes):
  - Severe congestive heart failure, cardiac ischemia
  - Hypertensive encephalopathy,
  - some cases of ischemic stroke
  - intracerebral bleeding
  - Aortic dissection

- Urgencies (BP lowered < hours):
  - Grade III/IV retinopathy
  - Renal involvement
  - MAHA
  - ... exist for days to weeks, are not life-threatening in minutes to hours

Recommended tests

- Creatinine, Postassium, Urine dipstick
- Hemoglobin, platelet count, LDH

- May consider/in specific conditions:
  - Blood smear
  - Urine microscopy
  - Chest X-ray
  - Funduscopic examination
  - Electrocardiogram
  - Brain imaging (CT)

oral treatment options

<table>
<thead>
<tr>
<th></th>
<th>dose</th>
<th>onset</th>
<th>max</th>
<th>warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nifedipine retard</td>
<td>20 mg</td>
<td>15-30 min</td>
<td>4-6 hours</td>
<td>Headache, tachycardia</td>
</tr>
<tr>
<td>captopril</td>
<td>25 mg</td>
<td>30-60 min</td>
<td>1-2 hours</td>
<td>Angioedema, hypotension</td>
</tr>
<tr>
<td>labetalol</td>
<td>200 mg</td>
<td>15-30 min</td>
<td>2-4 hours</td>
<td>Heart block, asthma</td>
</tr>
</tbody>
</table>

Systematic review: no clear preference for any of 3 drugs
Dutch guideline: pragmatic preference = nifedipine (don’t break capsule!!)

IV treatment options

- Labetolol
- Nitroprusside/nitroglycerine
- Phentolamine
- Nicardipine

No comparative outcome studies, preferential conditions, much controversy ....

Cases

All real!!
Vignet 2

- Vrouw, 26 jaar
- DVT Li-arm na plafond witten
- X-thorax:

Wat is uw diagnose?

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- Labetalol 0.5mg/kg, repeat and cont 20mg/hr
- Other lab tests ...
- Who wants urgent funduscopia?

Value of retinal examination in hypertensive encephalopathy
Fouad Amraoui, Gert A van Montfrans, Bert-Jan H van den Born

<table>
<thead>
<tr>
<th>Grade</th>
<th>Patients</th>
<th>Ophthalmologist</th>
<th>Neurologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>7 (25%)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Choroidopathy</td>
<td>1 (4%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Grade II</td>
<td>1 (4%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Grade III</td>
<td>11 (39%)</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Grade IV</td>
<td>8 (29%)</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>28 (100%)</td>
<td>22</td>
<td>4</td>
</tr>
</tbody>
</table>

Specificity: 15%
Sensitivity: 19/28 = 68%

Cause: difference in sympathetic innervation a cerebri post versus media?

J Hum Hypertens. 2010 Apr;24(4):274-9
Voor behandeling dan...?

Sleutelbegrip bij hypertensieve crise: precapillaire autoregulatie

Cerebrale perfusie
ml/100g/min

Bloeddruk mmHg

Maar ...

- Autoregulatie bij ernstige hypertensie zónder Gr III/IV fundus normaal?
- Gr III/IV fundus kan maandenlang symptomloos bestaan
- >25% bloeddruk daling sowieso niet veilig

→ Fundoscopie bij symptomloze patiënten niet van invloed op therapeutisch beleid

Fundoscopie bij ernstige hypertensie

- Eventueel: bij twijfel over diagnose HE (bv hoofdpijn, braken)
- Wél: bij visusstoornissen
- ... bij hypertensie zonder klachten

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- Labetalol 0.5mg/kg, repeat or cont 5mg/min
- Other lab tests ...
- Who really needs funduscopie → nobody
- Who now wants brain CT?
Case I

- 58 female
- Known hypertension, poor compliance
- vomiting, confusion, severe HTN: 240/138 mmHg
- Start labetolol; target BP?

Case II

- Male 52 years old
- Chronic headache
- GP for malaise, blurred vision → BP 235/145 mmHg
- Quick general physical: normal

PS: wat is jullie record?

>25% reduction = safe

>50% reduction: stroke, death

Cerebral autoregulation

- Normotensive
- Hypertensive
- Malignant Hypertension

Shandilov, BMJ 1973; Immink, Circulation 2005

Case II

- Male 52 years old
- Chronic headache
- GP for malaise, blurred vision → BP 235/145 mmHg
- Quick general physical: normal

- What’s your first step?
  - 20mg nifedipine retard
  - Lab and ophthalmology:
    - If retina normal → consider encephalopathy
    - Grade III/IV needs follow-up

WHY?
13-6-2018

90 minutes at least (hours before ophthalmologist)

Case III

- 74 year old female
- Always normotensive
- Moderate abdominal pain and bloody stools
- BP 200/120 mmHg

What's her diagnosis?
A. Microangiopathic hemolytic anemia (MAHA)
B. Aortic disease

Case IV

- 30 y, male
- Normotensive 4 years ago
- Recurrent episodes of ‘sense of impending doom’, for which psychiatrist consultation
- No substance abuse
- Pale, BP 190/110 mmHg, HR 125 bpm, thrombocytosis

Which drug is contra-indicated?
- A captopril
- B atenolol

Do NOT give beta-blockers
Labetalol may be unsafe
Alpha-blocker is safest
Start doxazosine or phentolamine

Case V

- 78 year old man
- History of congestive heart failure and hypertension
- Comes in at 05 AM, breathing 40/min, Osat 82%, BP 195/140 mmHg, cold extremities, no

What do you do?
A intubate
B something else?
Case V

- 78 year old man
- History of congestive heart failure and hypertension
- Comes in at 05 AM, breathing 40/min, O₂-sat 82%, BP 195/140 mmHg, cold extremities, no iv access

Vignet 3

- Vrouw 57 jaar
- gevoelige huidafwijking
- blanco voorgeschiedenis

a) hoe heet deze huidafwijking?
b) Wat is uw diagnose?

Vignet 3

a) eruptieve xanthomen
b) hypertriglyceridemie

Take Home

- Lack of comparative studies and guidelines
- Clinical experience and common sense
- Not all crises are real emergencies, but some are
  - Encephalopathy is a clinical diagnosis!
  - Beware of special cases, i.e. dissection, pheochromocyt.
  - Limit your drug armamentarium
  - Don’t test for hours to decide if treatment is needed within minutes
  - 25% BP reduction is a safe generic target for most

Vignet 4

- Vrouw, 38 jaar
- perifeer vaatlijden
- visusstoornissen
- + familieanamnese

Wat is uw diagnose?

Peudoxanthoma Elasticum
Vignet 5

- Vrouw, 34 jaar
- Aanvalsgewijze hevige pijn in voeten

Wat is uw diagnose?

Erythromelalgie

Diagnostiek LE

Vrouw 23 jaar

- Presentatie thoracale pijn
- Sinds 3 dagen pijn Li-flank bij AH
- Daarbij dyspnoe
- Anamnestisch 'koud en warm'
- oac

- Niet ziek, wel pijnlijk, 120/70 mmHg, HF 114, T37.5, later 38.2
- Verder eigenlijk geen afwijkingen

- CRP 126, L 9.6
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• Je denkt aan pneumonie, maar SEH-arts heeft D-dimeer al bepaald....
• 4.3 (normaal <0.5)

What happened...

D-dimeer 4.3

Never ignore extremely elevated D-dimer levels: they are specific for serious illness

T. Schulte, A. Thij, T.M. Smulders

• D-dimeer >10 x verhoogd:
  – 46% kanker
  – 40% VTE
  – 24% Trauma/Chirurgie
  – 6% Ao-dissectie
  – 5% overigen (w.o. ernstige sepsis)
  – 1% ‘niets’

Nog een, recent ...

• Vrouw 42 jaar
• 2 weken terug: operatieve verwijdering IUD
• Direct start pil
• 2 weken erna Calgary → NL
• Thoracale pijn, d-dimeer 0.7

• CT: goed beoordeelbaar, geen LE
• Na week belt huisarts: klachten nemen toe
• D-dimeer: 0.7 → 2.6
Na diagnose trombose
Carianne Verheugt…

Kom op, nog eentje
- Vrouw 62 jaar
- Jarenlange klachten malaise, anemie, acuut-fase-reactie
- PET-scan:

Wat is uw diagnose?

Kom op, nog eentje
- Vrouw 62 jaar
- Jarenlange klachten malaise, anemie, acuut-fase-reactie
- PET-scan:

Aortitis (reuscel-?)

Vraag 10
- Man, 69 jaar
- Pijnlijke voeten/tenen

Wat is uw diagnose?

Vraag 10
- Man, 69 jaar
- Pijnlijke voeten/tenen

Cholesterolembolie

Vasculaire Vragen…?
Bloedruk bij CVA

• behoefte ...

Acuut herseninfarct: effect van bloeddrukverlaging

INVEST, Stroke 2000

Acuut herseninfarct: effect van bloeddrukverlaging

<table>
<thead>
<tr>
<th>Death or dependency</th>
<th>Nominal placebo</th>
<th>Placebo</th>
<th>P-value ratio (95% CI)</th>
<th>P-value ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-dose</td>
<td>72/76</td>
<td>42/42</td>
<td>1.99 (0.82, 3.86)</td>
<td></td>
</tr>
<tr>
<td>High-dose</td>
<td>23/44</td>
<td>23/23</td>
<td>3.06 (1.40, 6.69)</td>
<td></td>
</tr>
</tbody>
</table>

No. of days

INVEST, Stroke 2000

ENOS-trial 2015: geen verschil

"VOORZICHTIG NAAR <185/110"
Protocol scheme

Acute spontaneous ICH confirmed by CT/MRI
Definite time of onset within 6 hours
Systolic BP 150 to 220 mmHg
No indication/contraindication to treatment

Intensive BP lowering
SBP <140 mmHg

Standard BP management
Guidelines SBP <180 mmHg

Median (IQR) time to treatment: intensive 4 (3-5), standard 5 (3-7)

NNT 28 om 1 onafhankelijk te laten zijn
~ 40% conservatieve groep kreeg behandeling

Verschil in lokale protocollen; meestal labetalol richting <140-150


Acute hersenbloeding: effect acute bloeddrukverlaging

N=2800 gives 90% power for 7% absolute (14% relative) decrease (50% standard vs 43% intensive) in outcome

Independent 90 day outcome with modified Rankin scale (mRS)

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~ 40% conservatieve groep kreeg behandeling


Systolic BP control

Median (IQR) time to treatment: intensive 4 (3-5), standard 5 (3-7)