Neurologist-in-training

Andrea O. Rossetti
Département des neurosciences cliniques, Service de Neurologie, CHUV, Lausanne, Switzerland

Funding / potential competing interests: No financial support and no other potential conflict of interest relevant to this article were reported.

Questions

You’ll find the answers at the end of the text.

Neurology in the emergency room

1. A young woman known to have anorexia presents with a falling foot on the right side since 2 days. Which of the following statements is correct?
   A If the ipsilateral gluteus medius is affected, the lesion involves the peroneal nerve.
   B Quantification of the axonal loss may be performed immediately by an ENG.
   C Entrapment neuropathies are frequent complications of vitamin deficiency.
   D No specific orthopaedic measure (splint) is generally needed.
   E Entrapment neuropathies may be triggered by rapid weight loss.

2. A 56-year-old woman presents with severe headache, neck stiffness, no fever and a first-ever epileptic convulsion. Which of the following statements is correct?
   A A seizure prophylaxis with anti-epileptic drugs is rarely prescribed in this setting.
   B A native head CT scan is sufficient for diagnosis.
   C Female gender may predispose to aneurismal rupture.
   D An infectious aetiology is unlikely to be at play.
   E An emergency brain MRI is needed for diagnosis.

3. A 78-year-old patient known to have arterial hypertension presents a sudden, irregular shaking of the right arm lasting approximately 5 seconds, followed by a transitory weakness; no other symptom is reported. Among the following possibilities, which one bears the highest potential danger in the immediate follow-up period?
   A Focal myoclonus.
   B Migraine with aura.
   C Focal (partial) epileptic seizure.
   D Limb shaking (cerebral ischaemia).
   E Conversion disorder (psychogenic).

4. An 18-year-old man is referred due to prolonged convulsions. He has a normal skin colour with closed eyes; his movements appear to have a waxing-waning fashion. His serum lactate is 1.2 mmol/l (norm <2). Which is your preferred therapeutic action?
   A Lorazepam 0.1 mg/kg IV.
   B Midazolam 0.15 mg/kg IM.
   C Propofol 2 mg/kg and intubation.
   D NaCl 0.9% IV with suggestion.
   E Thiamine 300 mg IV.

Neuro-imaging (in collaboration with PD Dr P. Michel, CHUV, Lausanne)

A 47-year-old man in good health is awoken from sleep by sudden vertigo and nausea, and mild posterior headaches. He falls when trying to stand up, but three consecutive medical evaluations find a normal exam. After 5 days of unchanged symptoms, he is sent to the emergency department. Clinically, the patient has no fever, and you observe a normal neurological examination except for marked axial ataxia when sitting and standing. There is no nystagmus, and Halmagyi head thrust testing is normal.

1. With this information, which of the following diagnostic possibilities is the least likely (A)?
   A Psychogenic vertigo.
   B Unilateral acute vestibular impairment.
   C Bilateral acute vestibular impairment.
   D Unilateral acute stroke in the PICA territory.
   E Bilateral acute stroke in the PICA territory.

The patient has no history of psychological distress, and he vomits in front of you. The non-contrast brain CT shows the following finding in the posterior fossa (fig. 1), without significant contrast enhancement.

2. Which of the following statements is/are correct regarding the cerebellar lesion (K’ = +/-)?
   A It is a chronic lesion, since it is well delimited.
   B There is some mass effect on the 4th ventricle.
   C A lumbar puncture can be performed safely to rule out cerebritis.
   D The history and the MRI finding are typical for a neoplastic origin.

In order to better characterise the lesion, you decide for surveillance in the stroke unit, instructing the nurses to waken him every 2 hours to check the vigilance, and you perform a brain MRI the day after. Below (fig. 2) you find the DWI.
This finding confirms an ischaemic stroke and its recent nature. No obvious aetiology was found in the extended work-up. The patient was given an anti-aggregation as secondary prophylaxis, which was started 6 days after symptom onset, beyond the swelling phase with a potential need of craniectomy.

Read for you

Anti-epileptic drugs and offspring: not all “new” is better than “old”

In view of the significant impact on health policy, teratogenic effects of prenatal exposure to anti-epileptic drugs (AED) are being increasingly investigated in the last years. While the vast majority of the large registries published to date report outcome after exposure to classical AED, several new compounds have received more attention recently.

The North American AED Pregnancy Registry was started in the late 1990s and its most updated analysis has been recently published [1]. Women enrol themselves if taking AED for any reason (but mostly for epilepsy) at any point during pregnancy. They are interviewed during pregnancy and 2–3 months after delivery; spontaneous abortions are excluded. Major congenital malformations are defined as structural abnormality with surgical, medical or cosmetic significance, excluding genetic abnormalities. In this report, outcomes in women exposed during the 1st trimester to monotherapy (at least 50 pregnancies per AED) were described. The reference group consisted of women without epilepsy and who did not take AED, who were friends and relatives of the enrolled (AED-exposed) pregnant women. Potential confounders such as age, race, education, alcohol or nicotine use, vitamin supplementation and chronic medical diseases were considered for analysis.

The results rely on 4899 exposed women and 442 controls. The major malformation risk in unexposed and exposed women is reported in table 1. Compared to unexposed women, valproic acid (VPA), phenobarbital (PB), and topiramate (TPM) (in descending magnitude) had significantly higher malformation rates, the same three compounds were significantly worse compared to lamotrigine (LTG). Adjustment to potential confounders did not change these data. While there was a significant dose-effect relationship for VPA (with up to 25% malformation rate in women taking >1500 mg daily!), no similar trend was observed for other AED. Interestingly, women with more frequent seizures during pregnancy tended to have fewer malformed offspring. The careful analysis and the large number of pregnancies reported represents obvious strengths to this study. Conversely, self-enrolment and self-report may have lead to inclusion and information bias in exposed women, and the follow-up to 3 months rather than 12 months [2] after birth may slightly underestimate the malformations incidence. Moreover, the high proportion of PHT users, unusual in Europe, reflects the situation in North America.

This important study provides us with a clear confirmation of the ominous effects not only of VPA but also of PB, similar to the EURAP pregnancy registry [2]. This has also to be put into the context of a proven deleterious effect of foetal exposure to VPA for cognitive development [3]. The fact that a higher seizure frequency during pregnancy was associated with a lower malformation rate may reflect the enhanced catabolism of some AED (particularly, LTG, oxcarbazepine [OXC], levetiracetam [LEV]); alternatively, the authors also suggest that AED that are more efficacious against seizures (VPA is the most efficacious wide-spectrum AED) may also exert teratogenic effects through modifications of neuronal transmission. Most interestingly, we are given data on several newer AED; TPM results are challenging, as are those (under caution because of the wide
Resident corner

259

confidence interval) of benzodiazepines (clonazepam [CLZ]). Conversely, LTG, but also LEV, OXC, gabapentin (GBP), and possibly Zonisamide (ZNS) (wide confidence intervals) appear relatively safe.

In conclusion, in women of childbearing age, it is mandatory to try to avoid VPA, PB, or if this is not possible to prescribe the lowest dosage. Caution is needed for TPM and CLZ. We are eagerly awaiting further data on the last generation of AED.

References


Table 1

<table>
<thead>
<tr>
<th>AED</th>
<th>Controls</th>
<th>LTG</th>
<th>CBZ</th>
<th>PHT</th>
<th>LEV</th>
<th>TPM</th>
<th>VPA</th>
<th>PB</th>
<th>OXC</th>
<th>GBP</th>
<th>ZNS</th>
<th>CLZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>(# women)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% major congenital malformation</td>
<td>1.1</td>
<td>2.0</td>
<td>3.0</td>
<td>2.9</td>
<td>2.4</td>
<td>4.2</td>
<td>9.3</td>
<td>5.5</td>
<td>2.2</td>
<td>0.7</td>
<td>0.0</td>
<td>3.1</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.3–2.6</td>
<td>1.4–2.8</td>
<td>2.1–4.2</td>
<td>1.5–5.0</td>
<td>1.2–4.3</td>
<td>2.4–6.8</td>
<td>6.4–13.0</td>
<td>2.8–9.7</td>
<td>0.6–5.5</td>
<td>0.0–3.8</td>
<td>0.0–3.3</td>
<td>0.4–10.8</td>
</tr>
</tbody>
</table>

AED = anti-epileptic drugs; CLZ = clonazepam; GBP = gabapentin; LEV = levetiracetam; LTG = lamotrigine; OXC = oxcarbazepine; PB = phenobarbital; PHT = phenytoin; TPM = topiramate; VPA = valproic acid; ZNS = Zonisamide; 95% CI = 95% confidence interval.

Answer key

Neurology in the emergency room
Right answer: 1E; 2C; 3D; 4D.

Neuro-imaging
Right answer: 1B; 2 –/+/-/–.