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A study of the effects of drugs used to treat epilepsy on semen, sex hormones and sexual function in young male patients with epilepsy

Submission date
12/04/2020

Recruitment status
No longer recruiting

Registration date
26/04/2020

Overall study status
Completed

Last Edited
24/04/2020

Condition category
Nervous System Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Epilepsy is a common condition that affects the brain and causes frequent seizures. Seizures are bursts of electrical activity in the brain that temporarily affect how it works.
Epilepsy is a common chronic neurological disorder with a worldwide prevalence of approximately 1%. Globally, there were 45.9 million patients with active epilepsy (both idiopathic and secondary epilepsy) in 2016. The first-line therapy for epilepsy is antiepileptic drugs (AEDs) treatment, and approximately 70% of people with epilepsy can achieve seizure control with a single antiepileptic medication. The National Institute for Health and Care Excellence guidelines recommend carbamazepine (CBZ) or lamotrigine (LTG) as first-line treatment options for patients with newly diagnosed partial seizures and then recommend levetiracetam (LEV), OXC, or VPA if CBZ and LTG are unsuitable or not tolerated. High-quality evidence also indicates that CBZ and LTG are suitable first-line treatments for patients with partial-onset seizures and demonstrates that LEV may be a suitable alternative. However, because CBZ and LTG have higher rash rates than the other three drugs, LEV is more expensive than OXC or VPA. Therefore, VPA and OXC continue to be commonly used AEDs for partial seizures. Clinical studies on the side effects of VPA and OXC have mostly focused on liver and gastrointestinal dysfunction, abnormal blood parameters, rashes and similar effects. It has been reported that VPA and OXC may be associated with decreased sexual function and increased frequency of morphologically abnormal sperm. There is evidence that VPA can lead to a significant reduction in the levels of FSH and testosterone (T) in male patients with epilepsy compared with healthy controls.
However, there remains controversy regarding the effects of VPA and OXC on the sexual function of male patients with epilepsy. Moreover, there have been few studies regarding the effects of OXC on semen quality and sex hormone levels. At the same time, due to the demand for reproductive health in reproductive-aged men, the current study aimed to evaluate the effects of VPA and OXC on sexual function, semen, and sex hormones in newly diagnosed young male epilepsy patients and provide a reference for AED selection in these patients.

Who can participate?
Adult male patients with simple partial seizures, complex partial seizures or secondarily generalized seizures. Healthy young male volunteers form the control group.

What does the study involve?
Participants will have semen quality, sex hormone levels, and sexual function assessments at baseline and six months. Epilepsy patients will be randomly allocated to receive one of two different epilepsy drugs for the six month study period.

What are the possible benefits and risks of participating?
None.

Where is the study run from?
Epilepsy Center of People's Hospital of Sichuan Province (China)

When is the study starting and how long is it expected to run for?
September 2014 to December 2016

Who is funding the study?
Sichuan Provincial People’s Hospital for Doctors or Youths (China)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Study information

Scientific Title

The effects of sodium valproate and oxcarbazepine on semen, sex hormones and sexual function in young male patients with epilepsy

Study objectives
This study aims to evaluate the effect of VPA and OXC on semen quality, sex hormones and sexual function in young male patients with partial epilepsy.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 13/03/2013, Ethics committee of Sichuan Academy of Medical Sciences and Sichuan Provincial People's Hospital (32# W. Sec 2, 1st Ring Rd. Chengdu, China; +86-028-87393265; no email provided), ref: none provided

Primary study design
Observational

Study design
Observational case-control

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Epilepsy

Interventions
Semen quality and sex hormone levels are assessed in newly diagnosed young male epileptic patients and healthy volunteers who meet the inclusion criteria. Additionally, a sexual function questionnaire survey will be conducted using the International Index of Erectile Function 5 (IIEF-5) regarding participants' sexual life. Semen quality, sexual function questionnaire scores and sex hormone results will be compared between the two groups.

The epileptic patients are treated with VPA (trade name: Depakote; packing specification: 500 mg × 30 pieces; Manufacturing: Sailof (Hangzhou) Pharmaceutical Co., Ltd.; batch number: H2O010595) or OXC (trade name: Trileptal; packing specification: 0.3 g × 50 pieces; Manufacturing: Novartis Farma S.P.A. (Italy); batch number: H2O130016) randomly.

The dosage of VPA is initially 250 mg twice daily, then gradually increased to an effective dose, and the maximum daily dose will not exceed 30 mg/kg. The dosage of OXC is initially 300 mg twice daily, then gradually increased to an effective dose, and the maximum daily dose will not exceed 2400 mg/d. All patients will be followed up once a month by a doctor. After 6 months of treatment, the semen quality and sex hormones of the patients will be tested again, and the IIEF-5 questionnaire used to evaluate the patients' sexual life. Semen quality, sexual function questionnaire scores, and sex hormone levels will be compared between the VPA group and the OXC group before and after treatment.

Intervention Type
Drug

Phase
Phase IV

Drug/device/biological/vaccine name(s)
Sodium valproate, oxcarbazepine

Primary outcome(s)
Quality of semen measured using lab test of semen sample at baseline and six months

Key secondary outcome(s)
1. Sex hormones measured using lab test of blood sample at baseline and six months
2. Sexual function measured using International Index of Erectile Function 5 (IIEF-5) at baseline and six months

Completion date
15/12/2016

Eligibility

Key inclusion criteria
1. Patients with simple partial seizures, complex partial seizures or secondarily generalized seizures
2. Healthy young male volunteers (control group)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
Male

Key exclusion criteria
1. Use of hormones, antidepressants, or drugs to improve sexual function
2. Liver and kidney dysfunction, thyroid disease, diabetes, infectious diseases, varicocele, cryptorchidism, history of testicular surgery, Klinefelter syndrome, or urinary system diseases
3. Long-term alcoholism, smoking, or exposure to toxic substances
4. Mental illness, intracranial occupying lesions, brain injury, or progressive degeneration of the nervous system
5. Inability to cooperate or refusal to participate in the study

Individual participation in the study was terminated if any of the following conditions were met:
1. Patients experienced adverse drug reactions after taking the medications and needed to discontinue the drug
2. Patients failed to achieve an ideal treatment effect (i.e., the reduction in the frequency of epileptic seizures is less than 75% after three months of treatment), and other AEDs needed to

be substituted or added
3. Patients or volunteers took medications or suffered from diseases that might affect the results during the study
4. Participants withdrew from the study for personal reasons

Date of first enrolment
30/09/2014

Date of final enrolment
01/12/2016

Locations

Countries of recruitment
China

Study participating centre
Epilepsy Center of People's Hospital of Sichuan Province
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Sponsor information

Organisation
Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital

ROR
https://ror.org/01qh26a66

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Sichuan Provincial People’s Hospital for Doctors or Youths

Results and Publications

Individual participant data (IPD) sharing plan

All data generated or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other