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## Case study : Epileptic patient with Ovarian mature cystic teratoma

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### ABSTRACT

Women, of all ages, with epilepsy have their own considerations which must be taken into account if their care is to be optimised. Although the issues are usually considered when a female becomes of childbearing age, antiepileptic drug (AED) therapy during childhood may influence choices in adult life.

Hormonal alterations, including changes in prolactin, follicle-stimulating hormone and luteinising hormone have been observed following generalised and focal seizures. They are thought to arise as a result of connections between the hypothalamic-pituitary axis and areas of the brain involved in seizures, although the precise mechanisms are unclear. These hormonal problems can result in reproductive dysfunction, with the most common disorders being polycystic ovarian syndrome (PCOS) and hypothalamic amenorrhoea. This case study reported Ovarian mature cystic teratoma as a possible reproductive dysfunction that may be a result of epilepsy. © 2016 Trade Science Inc. - INDIA

### KEYWORDS

Epilepsy;  
Teratoma.

### CASE STUDY

The case we are reporting is of a 30-year-old woman who was diagnosed with epilepsy at the age of 16. Carbamazepine (CBZ) was tried but to no effect. He was started on clozapine in may 2000 but required repeated admissions due to noncompliance. In September 2014 she developed teratodermoid tumor for the first time on CBZ and had to be treated by surgical decompression.

CBZ was discontinued; she became psychotic and

was readmitted. She was reinitiated on valproate. Data Obtained from MRI showed large pelvic, left adnexal lesion of mixed signal intensity pattern, likely ovarian in origin (teratodermoid tumor). And, minimal pelvic free fluid.

Additionally, pelvic ultrasonography prevailed a large well-defined, left ovarian cystic swelling, 6\*7 cm. with extensive macro-calcification and thick wall. No visible solid component could be seen. Mostly benign cystic lesion. AVF uterus of average size with IUD in place. no myometrial lesion. right ovary shows a follicular cyst

3\*3 cm. while, normal US features of urinary bladder and free douglas pouch as well as normal abdominal

ultra sonography. On other hand the complete blood count reveal the data presented in TABLE 1

**TABLE 1 : Complete blood picture**

Parameter	Result	Reference range	Parameter	Result	Reference range
Hb	12	13-18	Platelets	178*10 <sup>3</sup>	(150-400) 10 <sup>3</sup>
RBCs	5*10 <sup>6</sup>	(3.5-5.5 )*10 <sup>6</sup>	WBCs	4300	4000-11000
HCT	36	35-45	Staff	2	1-5
Reticulocyte	1	0.2-2	Segmented	40	45-75
MCV	72	76-96	Lymphocytes	50	25-45
MCH	24	Reference range	Esinophils	2	1-6
MCHC	36	13-18	Basophils	1	0-1

Likewise, the patient has Prothrombine Time and concentration test which had shown the following results.

**TABLE 2 : Prothrombine time and concentration**

INR	PC	PT	
1.0	100%	12.5 second	Control
1.0	100%	12.5 second	Patient

## DISCUSSION

The association between epilepsy and reproductive disorders was first

described in the 1950s. Today the roles of epilepsy and antiepileptic medication in contributing to reproductive endocrine disorders in people with epilepsy are still widely debated. Epilepsy itself may disturb the regulation of secretion of reproductive hormones<sup>[5]</sup>.

Regarding, effects of hormones on epilepsy, Hormones can affect seizure activity. In catamenial epilepsy the frequency of seizures depends on the phase of the menstrual cycle as a consequence of altered levels of female sex steroids<sup>[4]</sup>.

It has been shown that estrogen is a proconvulsant, whereas PROG has anticonvulsant properties. Therefore, in catamenial epilepsy the seizures usually occur in the end of the luteal phase when the levels of PROG rapidly decline. Consistent with this antiestrogenic clomiphene therapy and intermittent PROG therapy have decreased seizure frequency in women with catamenial epilepsy. Thyroid hormones also have effects on seizure activity. Thyreotoxicocis may predispose to seizures, and status epilepticus may be induced by thyroxinel<sup>[8]</sup>.

Thereafter several other reproductive disorders have been associated with epilepsy: irregular menstrual cycles, anovulation, hirsutism in women and decreased potency in men. Abnormal reproductive function is also more prevalent in untreated PWE than among the general population. Furthermore, the serum concentrations of several hormones may be altered in PWE, and increased secretion of pituitary hormones has been shown to be associated with seizures<sup>[6]</sup>.

The secretion of gonadal hormones can be affected by increased electrical activity associated with epilepsy. Electrical changes, which occur during the seizures and also during the interictal period, may interfere with the release of pituitary hormones and hence cause reproductive dysfunction. It has been shown that electrical discharges during both generalized and hormones<sup>[7]</sup>.

Furthermore, recurrent interracial paroxysmal discharges have also been suggested to interfere with the release of gonadotropins, which may be associated with dysfunction in the regulation of reproductive function. An association between the laterality of tempolar lobe epilepsy and occurrence of certain reproductive endocrine disturbances has also been suggested. In Herzog's groups study left lateral discharges were followed by disturbances in LH secretion which affected the serum levels of T and DHEAS and the LH/FSH ratio and was associated with high prevalence of PCOS. On the other hand, right lateral discharges were associated with increased secretion of prolactin associated with hypogonadotropic hypogonadism and disturbed sexual function<sup>[12]</sup>.

On the other hand, AEDs are also known to induce reproductive endocrine disorders. It is well known that

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valproate (VPA) is associated with reproductive disorders and obesity in women with epilepsy (WWE)<sup>[1]</sup>.

The efficacy of standard AEDs is well established and some differences in efficacy between VPA, phenytoin (PHT), carbamazepine (CBZ) and novel AEDs have been observed when these AEDs have been used for appropriate seizure types. However, there are only a few head-to-head studies that have compared the efficacy of novel<sup>[7]</sup>.

CBZ is the most commonly prescribed drug for epilepsy in Europe. It is the drug of choice in partial epilepsies with or without secondary generalization. It is chemically related to tricyclic antidepressants and blocks the sodium channels in neural membranes.

CBZ has limited water solubility, and 75% of CBZ is bound to plasma proteins. CBZ is an inducer of the hepatic P450 enzyme system, and it also induces its own metabolism. Therefore, higher doses are needed to maintain the plasma concentration in long-term therapy (Liu & Delgado 1994). Due to the hepatic induction, CBZ also has effects on the metabolism of endogenous and exogenous hormones<sup>[9]</sup>.

Neurological adverse effects are fairly often associated with the use of CBZ. Nystagmus, drowsiness, headache and ataxia are often seen. Nausea and rash are also common side effects of CBZ. More severe adverse effects of CBZ include effects on cardiac function, e.g. atrioventricular conduction delay and bradyarrhythmias and aplastic anemia, toxic hepatitis and Stevens-Johnson syndrome<sup>[10]</sup>.

A teratoma is a tumor with tissue or organ components resembling *normal* derivatives of more than one germ layer. Although the teratoma may be monodermal or polydermal (originating from one or more germ layers), its cells may differentiate in ways suggesting other germ layers. The tissues of a teratoma, although normal in themselves, may be quite different from surrounding tissues and may be highly disparate<sup>[11]</sup>.

Teratomas belong to a class of tumors known as nonseminomatous germ cell tumor (N.S.G.C.T.). All tumors of this class are the result of abnormal development of pluripotent cells : germ cells and embryonic cells. Teratomas of embryonic origin are congenital; teratomas of germ cell origin may or may not be congenital (this is not known). The kind of pluripotent cell appears to be unimportant, apart from

constraining the location of the teratoma in the body<sup>[3]</sup>.

This case study document the occurrence of the current diagnostic features of teratomas, which is ovulatory dysfunction more frequently than expected in women of reproductive age with epilepsy and irrespective of AED treatment.

## CONCLUSION

This case report can be used to remind clinicians of keeping in mind the potential of epilepsy associated with incidence of teratodermoid tumor which can be easily confused with more serious conditions. We hope that this case series will raise the profile of a potentially effective alternative to discontinuing carbamazepine after teratodermoid tumor.

## RECOMMENDATION

In the meantime, women with epilepsy should be carefully monitored with regard to menstrual function, bodyweight and hyperandrogenism, and evaluation of these parameters should become part of the routine evaluation in baseline and follow-up consultations.

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## List of Abbreviations

AED	:	antiepileptic drug
PCOS	:	polycystic ovarian syndrome
CBZ	:	Carbamazepine
WWE	:	women with epilepsy
PHT	:	phenytoin
VPA	:	valproate
RBC	:	Red blood cell
MCV	:	Mean cell volume

MCH : Mean cell hemoglobin  
Hb : Hemoglobin

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