

Duloxetine and Sexual Disinhibition: An unrecognised ADR

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Objective

To highlight an unrecognised adverse drug reaction (ADR) occurring with the addition of duloxetine to a patient's medication regimen, and recognize the importance of recording ADR's for future patient use.

Clinical Features

A 68-year-old male was admitted to the rehabilitation ward from the intensive care unit (ICU) following an episode of Guillian-Barre Syndrome.

Medical History

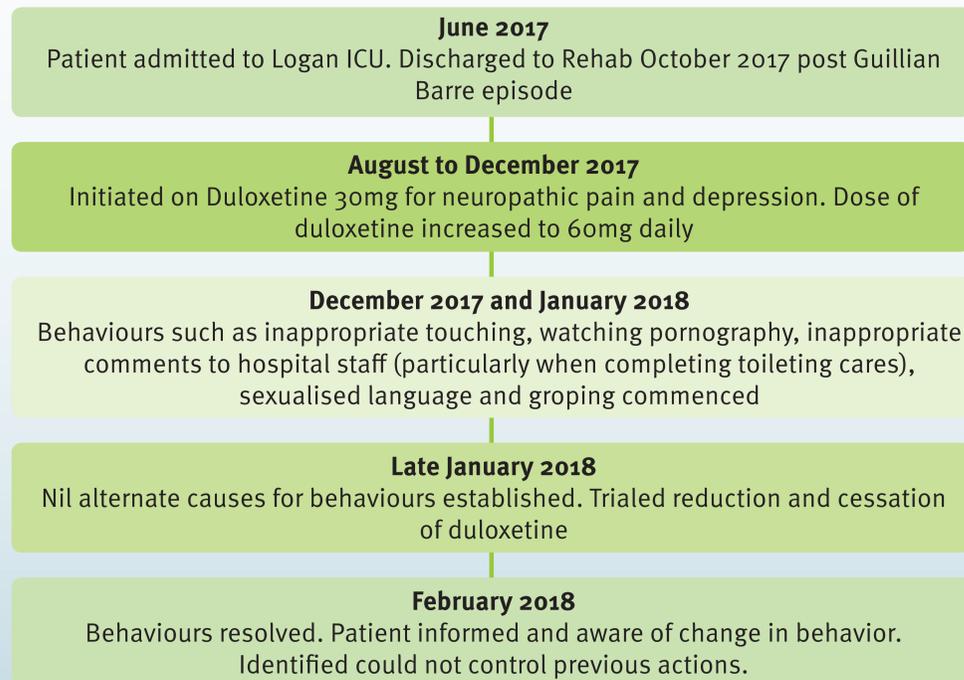
- Guillian Barre Syndrome
- Morbid obesity
- Suicidal ideation
- Hypertension
- Gout
- Reflux

Medication history

- Mirtazapine 30mg at night
- Oxycodone-Naloxone 10mg-5mg twice daily
- Paracetamol SR 665mg 2 tablets three times daily
- Pantoprazole 40mg daily
- Meloxicam 15mg daily when required
- Diphenoxylate-Atropine 2.5mg-25mcg 2 tablets three times daily
- Oxycodone 5mg three times daily when required

During his admission he was diagnosed with neuropathic pain and was commenced on duloxetine to manage this as well as his comorbid depression.

Timeline



No organic cause was found for this behavior, however the timeline fitted with the introduction of duloxetine. It was decided, in consultation with the liaison psychiatry service, to trial a cessation of this medication. Approximately two weeks post discontinuation, the patient's behavior diminished significantly. The pharmacist completed an ADRAC report and documented an ADR in the clinical record.

Duloxetine has not been associated with impulsive behaviours in clinical trials and whilst sexual dysfunction is a commonly cited side effect, there are no reported cases in the literature of sexualised behaviour.

A explanation for this phenomenon in our patient could be due to the areas of activation that duloxetine effects in the brain.

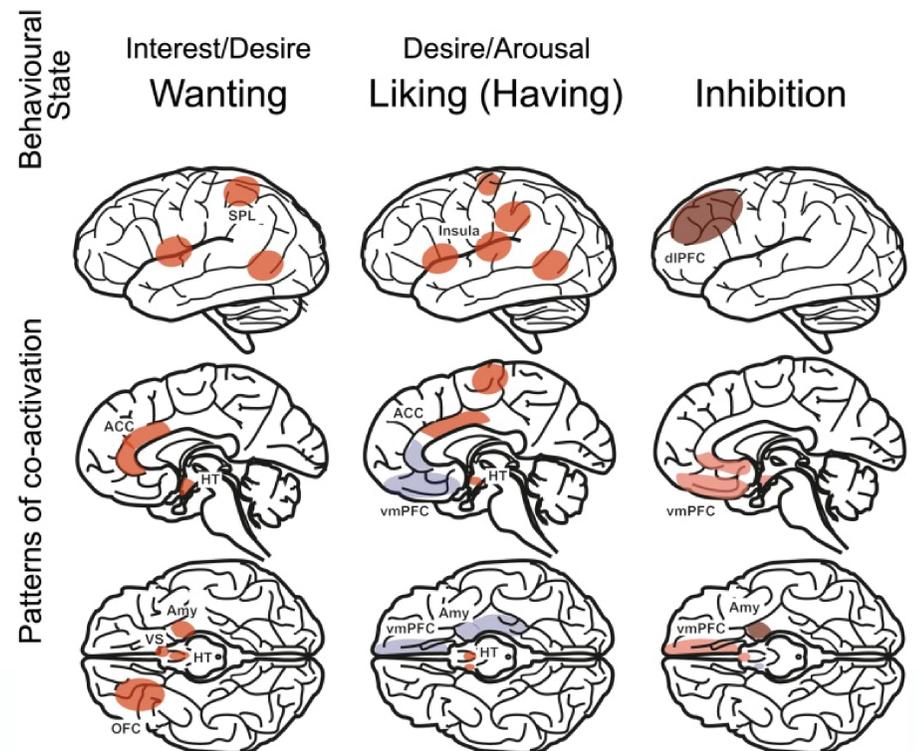


Figure 1. The human sexual pleasure cycle. The brain areas relevant are coded according to activity (Red: increased activity and blue decreased activity). Inhibition can be physiological (pink) or deliberate (brown)

Key: ACC (anterior cingulate cortex), Amy (amygdala), Dipfc (dorsolateral prefrontal cortex) HT (hypothalamus), OFC (orbitofrontal cortex), SPL (superior parietal lobule), vmPFC (ventromedial prefrontal cortex), VS (ventral striatum)¹.

Proposed Mechanism of Action

The differences in duloxetine compared to other antidepressants is that it not only influences **serotonin** and **noradrenaline** re-uptake, it has also been shown to have **analgesic** properties.

It is thought that these analgesic properties are due to the modulation of particular areas of the brain: the dorsolateral prefrontal cortex, the ventrolateral prefrontal cortex and the anterior cingulate cortex².

In Figure 1, it can be seen that the anterior cingulate cortex plays a role in sexual interest, and that the dorsolateral prefrontal cortex must be deliberately inhibited to inhibit sexual desire. Having an upregulation in these regions of the brain due to duloxetine could theoretically explain these changes in behavior. This area of clinical understanding is continually evolving and is currently postulation only.

Duloxetine has been shown to have a 100 times greater affinity to human serotonin and noradrenaline transporters compared to venlafaxine. This could explain why this reaction occurred with its use, and has not been reported with venlafaxine².

Conclusion

The pharmacist can play a role in recognizing the timeline of patient symptoms and medication changes.

Ensuring adverse drug reactions are documented in the clinical record and that the appropriate reports are made to the regulatory authorities can assist in recognizing previously unreported adverse effects. Ensuring the recording of these adverse reactions can prevent unwanted patient harm in the future.

References

1. Ruesink GB, Georgiadis JR. Brain Imaging of Human Sexual Response: Recent Developments and Future Directions. *Current Sexual Health Reports*. 2017;9(4):183-191. doi:10.1007/s11930-017-0123-4.
2. Onu u AH. Duloxetine, an antidepressant with analgesic properties – a preliminary analysis. *Romanian Journal of Anaesthesia and Intensive Care*. 2015;22(2):123-128.