Can blue-blocking glasses be a treatment for bipolar disorder?

Psykiatriveka 07.03.2016

Tone E.G. Henriksen
Psychiatrist and PhD-student
Valen Hospital, Helse Fonna
Clinical Institute 1, University of Bergen
Supervisors:
Anders Lund and Ole Bernt Fasmer
Bipolar patients have arhythmical circadian systems during episodes

More episodes at spring and autumn equinoxes

Earlier first episode at higher latitudes

Super-sensitivity to light at night
Case-report, patient with rapid cycling bipolar disorder treated with extended bed rest and 14 hours of darkness, (Wehr 1998, Biological Psychiatry)
Dark therapy for mania, pilot study, 14 hours of darkness/ 3 days (Barbini, Benedetti, Bipolar Disorders 2005: 7, 90-101)
New photoreceptor discovered

• The intrinsically photo-responsive retinal ganglion cell is solely responsible for the input of day-light signal to the suprachiasmatic nucleus

• Photopigment melanopsin.

Maximal sensitivity blue frequencies
Blue-blockers impede the capacity of white light to suppress melatonin,  
(Sasseville 2006, Kayumov 2009, van de Werken 2013)
Design of study: RCT

Inclusion criteria:
Inpatients diagnosed with manic states and bipolar disorder
Age between 18 and 70 years
• Written informed (delayed) consent

Exclusion criteria:
• Inability to comply with the study protocol
• Severe retinal damage, cataract or corneal damage on both eyes

RCT
• 13 patients treated with amber-tinted glasses as add-on treatment from 6 pm to 8 am for 7 days.

• 11 patients treated with placebo clear-lensed glasses
Mania
Blocking blue light during mania - markedly increased regularity of sleep and rapid improvement of symptoms: a case report (Bipolar Disorders 2014)
Actigraphy day 0-14
• Rapid reduction of manic symptoms

• Markedly increased regularity of sleep

• Less activity during sleep
“I still use the glasses – not regularly, but definitely when I want to rest my brain. What is beyond doubt when it comes to wearing the glasses is that I feel calm when I wear them - and I have good experience from using them during my latest hospital stay in 2013. It was a small wonder to get well so quickly. To be in a manic state is very exhausting – I remember the relief of coming out of it so soon. Before, I was completely worn out and experienced the usual depression afterwards. After the hospital stay I had returned to normal function by the time I got home. This spring too I have had days with energy bordering on mania - in combination with rapidly shifting thoughts - but I have remained in control by means of using the glasses when needed. I have been working without a single day of sick leave and with normal function.
Results RCT

a) YMRS total: Means with 95% CI

b) YMRS - Individual change from baseline
Pasienterfaringer fra studien

• «Synes de fungerte veldig godt-merket lettere at jeg var sliten når jeg tok på brillene-da jeg første gang tok på brillene fikk jeg en trang til å gråte-fant dette interessant-ellers er jeg overbevist om at brillene fungerer.»
• «Beroligende syn- gleder meg til å få på brillene»
• «Kvitt lys pleier stresse meg; desse brillene hjalp til å duse ned alle inntrykk og vart lettare å fokusere.»
• «Vil fortsette med briller. Ser lysere på livet, ser klart. Sover godt/djupt. Fant roen på kvelden.»
• «Blei roligere, fikk livligere drømmer.»
Rats exposed to the wrong light at the wrong time

- Single night exposure, 2 hours
  6 pm- 8 pm

Significant changes in:
body temperature
heart rate,
NREM-sleep (less)
REM-sleep (less)
Lasting more than 4 days
Possible mechanisms

- Disruption of light/dark cycle has a profound impact on the body

- Mania maintained by wicious circle of self-exposing to the wrong light at the wrong time?

- Blue-blockers stop wicious circle by separating the effects of wake and light environment