



Experience of NeoFertility in California

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Restorative Reproduction with NeoFertility Conference

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Presenter Disclosure

- Presenter's Name: Lynn Keenan, MD
- I have no current or past relationships with commercial entities
- Speaking Fees for current program:
 - I have received no speaker's fee for this learning activity

Overview

- NeoFertility Case Review
- Sleep Questions on Intake form
- Review of impact of sleep disorders on fertility and pregnancy
- Lessons learned along the way
- Questions

NeoFertility Case Review

- 30 y/o woman with presented with a history of recent miscarriage at 13 weeks after a placental tear
- Medical history complicated by:
 - Severe migraines, associated with numbness one side of her body, inability to talk or think clearly, with the confusion sometimes lasting weeks
 - *worsened by progesterone, or sleep deprivation*
 - Helped with verapamil 240 mg a day, sertraline 100 mg and lorazepam prn
 - SIBO – Small intestinal bowel overgrowth – tried multiple treatments-meds, diet, exercise, without much help. Worse with the constipation from verapamil
 - Chronic pelvic pain – daily for 10 years
 - Interstitial cystitis, up 3-4 times a night
 - Unrefreshing sleep, in bed 2230-0800

NeoFertility Case Review

<u>Symptoms of Endometriosis</u>	No <u>problem</u> - moderate - severe
Very painful periods	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> 6x <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Constipation during period	1x <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Diarrhoea during period	1x <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Sharp pain with intercourse during deep penetration	<u>1</u> 2x <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>

<u>Symptoms of Polycystic Ovaries</u>	No <u>problem</u> - moderate - severe
Excessive body or facial hair	1x <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Acne on body or face – <u>accutane</u> in college	1X <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Overweight despite diet and exercise	1X <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>

<u>Symptoms of Sleep Apnoea</u>	No <u>problem</u> - moderate - severe
Excessive snoring	<u>1</u> 2X <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Witnessed apneas	1x <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Unrefreshing sleep	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> 8x <u>9</u> <u>10</u>

Has nightmares, and may leave with depressed mood next day. No parasomnias. Never feels refreshed when awakening and has nocturia several times a night, though better with lorazepam. Sleeps 2230-0800, rarely naps.

Symptoms of Endorphin Deficiency – Average score out of 10 for the last month or two

Woman

	No <u>problem</u> - moderate - severe
Low Energy	<u>1</u> <u>2</u> <u>3</u> 4x <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Low Mood	<u>1</u> <u>2</u> 3x <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Anxiety	<u>1</u> <u>2</u> 3x <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Difficulty sleeping	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> 6x <u>7</u> <u>8</u> <u>9</u> <u>10</u>

Man

	No <u>problem</u> - moderate - severe
Low Energy	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Low Mood	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Anxiety	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>
Difficulty sleeping	1x <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>

NeoFertility Case Review

- One previous pregnancy – after 6-8 months trying to conceive
 - Complicated by low progesterone – took progesterone first trimester and suffered with the migraines. Kept the verapamil and sertraline through the pregnancy
 - Hyperemesis
 - Delivered healthy baby girl at 40 weeks
- Previously using Creighton with first pregnancy, then changed to Marquette, so had no recent paper charts

NeoFertility Case Review

- Initial plan with NEO charting:
 - Add Low dose naltrexone
 - Add dextroamphetamine – initially 5 mg and sent Dr Check's article
 - Taper verapamil off
 - Move sertraline to morning dosing for less effect on sleep, then taper off
 - Assess sleep – was not able to get sleep study done initially so advised use of snorelab app, and overnight oximeter and to get CBT-I Coach app
 - Check labs -

NeoFertility Case Review

- Next visit- VERY happy that with LDN her bowels were better than they had been in years
- Verapamil and sertraline taper went well and she did not have worsening of her migraines except when sleep deprived
- She loved Dr Check's paper, found his email at the bottom – reached out, and she was delighted that she was able to talk by phone with him. On his advice, we increased the dextroamphetamine to 15 mg ER, with partial improvement in pelvic pain, then increased further to 30 mg.
- Added Vitamin D
- Started HCG 1500 units P+3, 5 and 7 for progesterone of 43 nmol/l (13.6), E2 of 1142 pmol/l (311)

NeoFertility Case Review

- Next cycle, added:
 - letrozole 12.5 mg day 3
 - HCG 10,000 u at peak
 - P+3, 5 , & 7 HCG 1500 u
- Continued dextroamphetamine 30 mg ER, LDN 5 mg, Vit D, melatonin 3 mg



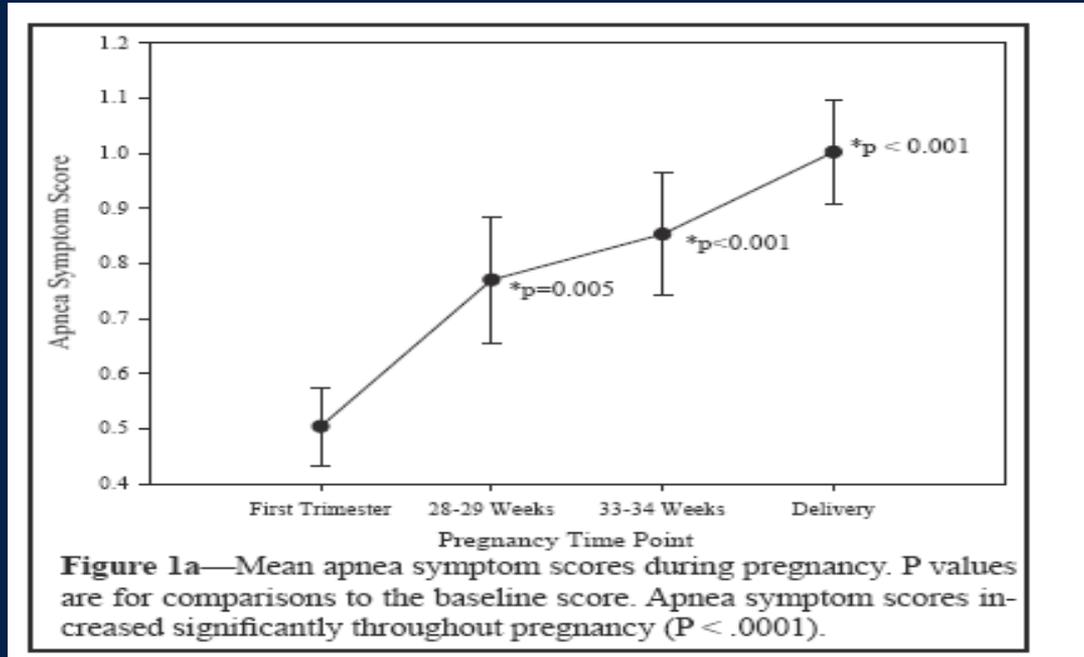
NeoFertility Case Review

- Progesterone levels initially suboptimal - 57-63 nmol/l (18-20 ng/ml), and progesterone added until levels in normal range
- Ordered oxygen 4 l/m via nasal cannula for 20 minutes if migraines return
- Migraine returned – one episode of numb in both legs, unable to speak, confused
- Neurological findings all resolved after oxygen therapy– fastest recovery she has ever had.

Sleep Questions on Intake form

<u><i>Symptoms of Sleep Apnoea</i></u>	No problem - moderate - severe
Excessive snoring	1 2 3 4 5 6 7 8 9 10
Daytime sleepiness	1 2 3 4 5 6 7 8 9 10
Wake up a lot at night	1 2 3 4 5 6 7 8 9 10

Apnea Symptoms During Pregnancy



Sleep Disordered Breathing and Pregnancy

- Nightly snoring at the end of pregnancy occurs in 23% of pregnancies
 - 3.45 OR of intrauterine growth retardation.
 - In pregnancy:
 - Snoring gives OR of 2.0 for developing HTN
 - Witnessed apneas have an OR of 8.0
 - Pre-eclampsia developed in 10% of snorers.
 - Apgar scores were lower in infants born to snorers.
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- Franklin K. Chest 2000;117:137-141. Edwards N, Sullivan C. Sleep Med Clin 3(2008)81-95.

Sleep Disordered Breathing

- Randomized study comparing CPAP treatment vs no treatment in women with HTN and snoring in pregnancy. (7 vs 9)
- CPAP group able to:
 - decrease antihypertensive doses
 - had uncomplicated pregnancies
 - better APGAR scores
- Controls: increased antihypertensive doses
 - one pt with pre-eclampsia
- Poyares et al. Sleep Med 2008;9:15-24.

OSA and the risk of adverse pregnancy outcomes

- Retrospective review of 791 women with OSA and 3955 women without OSA.
- OR for low birth rate: 1.76
- OR of preterm birth: 2.31
- OR of Cesarean section: 1.74
- OR of preeclampsia: 1.60
- OR of gestational HTN 3.18
- Chen Y-H, Kang J-H, Lin C-C, et al. Obstructive sleep apnea and the risk of adverse pregnancy outcomes. *Am J Obstet Gynecol* 2012;206:136.e1-5.

Obstructive sleep apnea in pregnancy

- Three variables with best predictive value for OSA in pregnancy:
 - Age
 - BMI
 - Snoring \geq 3 nights per week
- Evaluation: Home sleep test followed by APAP if apnea hypopnea index (AHI) greater than 5/hour
- Sleeping on the sides, addressing allergies, elevating head of bed may help

Why I think Neo is so cool



- Incorporates best of many methods, and is always looking for new advances
- The charting makes sense
- The app guides women with daily observations and interpretations
- The habit helper is a great personal tool
- You tube videos get couples up and running quickly, and fertility advisors are available to clarify, encourage. Fertility advisors are a limited resource and tailoring sessions to when needed most expands their outreach

More AHA Moments!

- Treatment options continue to grow and therapy can be tailored and adjusted *quickly!*
- Amazing research tool
- Patients love it
- Physicians in training are ready to use it personally
- And – sleep is finally incorporated in a method 😊

