Seafood, Spas, & Sandwiches: The Story Behind (a few) Common Pregnancy Questions

Cara Heuser, MD
Assistant Professor, Maternal-Fetal Medicine
University of Utah and Intermountain Healthcare
Objectives

• Define the debate over common pregnancy questions
• Review (briefly) the data behind these questions
• Discuss the recommendations for management and patient counseling
• Topics of focus:
  • Fish consumption during pregnancy
  • Hyperthermia during pregnancy
  • Risk of Listeria from food sources during pregnancy
Seafood.....

“Doctor, will this happen to my baby?”
Why the debate?

Positives:
- contain high-quality protein
- are low in saturated fat
- are high in omega-3 fatty acids and vitamin D

Negatives:
- Nearly all fish contain traces of mercury which may effect neurodevelopment of the fetus
The FDA says (2014)...

1. Eat 8-12 oz (2-3 servings)/week of a variety of fish
2. Choose fish lower in mercury (e.g. salmon, shrimp, pollock, light canned tuna, tilapia, catfish, cod)
3. Avoid: tilefish from GOM, shark, swordfish, king mackerel
   - Limit while albacore tuna to 6oz per week
4. Pay attention to fish advisories for locally caught fish

http://www.fda.gov/Food/ResourcesForYou/HealthEducators/ucmo83324.htm
Dueling Cohorts

- Two studies showing conflicting results published in same journal in 2006

Republic of Seychelles VS. Faroe Islands

Bottom line: At 11 y/o, NO pattern (positive OR negative) noted with mercury exposure

Bottom line: mixed

Davidson et al. Neurotoxicol Teratol 2006;28:529-55

What about US population?

- None of the aforementioned studies/cohorts are applicable to US population
- They eat A LOT more fish than us
  - Among US women of childbearing age median levels of mercury in hair or 0.19 ppm overall
  - Mean 0.34 ppm among women consuming 3+ servings or more of fish per month
- Children in these cohorts continued to be exposed to higher levels of mercury post-natally
- Several epidemiologic studies exist in populations more similar to the US population (ALSPAC, Oken)
ALSPAC study

- Avon Longitudinal Study of Parents and Children
- Low maternal seafood intake associated with increased risk of suboptimal outcomes for prosocial behavior, fine motor, communication, & social development scores
- Maternal seafood consumption of <340g/week was associated with increased risk of lowest quartile for verbal IQ with OR 1.48 (CI 1.16-1.9)
- Dose/response curve noted with lower intake=lower scores & higher intake=higher scores
- Results persist after controlling for 28 confounders

Lancet 2007
ALSPAC conclusions

• More than 340g was not detrimental
• More fish resulted in higher developmental scores
• Less fish was associated with increased risk of lower developmental scores
• Risks from loss of nutrients were greater than the risks of harm from exposure to trace contaminants
Oken, et al. Study

- Prospective cohort study of 341 mother-child pairs in Massachusetts
- Maternal fish intake directly correlated with erythrocyte total mercury
- Maternal fish intake of >2 servings/week was directly associated with higher neurodevelopment scores
- No benefit with fish consumption at or below 2 servings per week
- However, within those groups, higher mercury levels were associated with lower scores

Am J Epid 2008
Oken study conclusions

- More fish = higher scores
- Higher mercury dulled this effect
- “Maternal consumption of fish lower in mercury and reduced environmental mercury contamination would allow for stronger benefits of fish intake.”
Q: So, why not just take DHA?
A: Because it probably doesn’t work and it’s expensive

- Cochrane review, 2015
  - 8 RCTs with a total of 1567 patients
  - Quality of evidence: moderate to low
  - Supplementing did NOT improve growth, problem-solving ability, intelligence, psychomotor, motor, or language development, visual acuity
  - Age of children at last assessment was 7 years
  - There is inconclusive evidence to support or refute supplementation in pregnancy and breastfeeding

- CVS web site:
  - Prenatals (regular): $11 for 100 pills
  - Prenatals (+DHA): $15 for 60 pills
**Bottom Line**

- Fish intake (>2-3 servings per week) is probably good for fetal neurodevelopment.
- Current FDA recommendations may be too conservative and result in women not receiving many of the beneficial effects of fish intake.
- Limit intake of high mercury fish and choose those low in mercury.
- Not enough evidence for routine supplementation with DHA.
Spas/Hot tubs...

“Doctor, how can this be avoided?”
Why the debate?

Positives:
- MSK relief

Negatives:
- Effect of hyperthermia on developing embryo/fetus
- Miscarriage
- Birth defects
Current Recommendations

- Organization of Teratology Information Specialists (OTIS)
- Before 6 weeks of pregnancy hot tub/sauna use should be limited to 10 minutes secondary to risk of NTD
- After 6 weeks of pregnancy use should be limited to 10 minutes to avoid overheating or dehydration BUT normal use does NOT seem to increase risk of birth defects
- Electric blankets, heated beds, etc not likely to raise body temp enough to increase risk
Bottom Line

- Healthy women
- Limit use or do not use hot tubs/saunas during early pregnancy secondary to use of NTD and +/- SAB
- Until NT closure ~ 28d post conception or first 6w of pregnancy
- Use is likely safe after NT closure
- Use common sense
Sandwiches(etc)....

“Doctor, will my baby turn into lunch?”
Why the debate?

Positives:
- nutrition
- convenience

Negatives:
- Listeria
Listeriosis—What is it?

- Listeria monocytogenes (gram + intracellular rod)
- Disease most severe in people with weakened immune systems (e.g. pregnancy)
- Symptoms are fever, muscle aches, GI upset
- If spreads to nervous system, can lead to h/a, stiff neck, confusion, convulsions
- Risk of miscarriage, stillbirth, uterine infection, PTL, NND, NN meningitis, NN sepsis
- May occur 2-14 days following maternal infection
- No increased risk has been reported in women who did NOT have symptoms
Where does it come from?

- Naturally occurs in soil, water, animal digestive tracts
- First foodborne infection reported in 1981 from coleslaw in Nova Scotia
- Has been reported in a variety of other foods such as:
  - uncooked meats
  - Vegetables/fruits (unwashed)
  - hot dogs/cold cuts/lunch meat (unless heated)
  - unpasteurized milk or foods/cheese made with unpasteurized milk
  - Refrigerated pate and meat spreads, refrigerated seafood
  - The list keeps getting longer: ice-cream, hummus, queso (even with pasteurized milk)
How great is the risk?

- In US, about 1600 people annually become ill from Listeria (about 1/7 of these are in pregnant patients = 228)
- About 250 of them die
- 90% of cases are in high risk groups (e.g. pregnancy)
- Pregnant women are about 13x more likely than other healthy adults to get listeria
- However, remains relatively uncommon
- 0.27 cases per 100K = 1 in 400K
Things that are more common than pregnancy complications from listeria...
Being bitten by a dog in NYC (n=8,064)
Being bitten by a person in NYC
n=1587

New Yorkers?
Getting in a car accident on your way to buy deli meet/hot dogs/etc.

2008 traffic fatalities = 39,800
Death by Falling down stairs

n=1000
Things that are less common than listeriosis related pregnancy complications...
Shark Attack
Being Struck by Lightning
Death by Coconut
n~150/year
Bottom Line

- Risk of listeria from contaminated food sources is **real but rare**
- Patients often received information from sources other than health care providers but would prefer to receive information from providers
Resources

Resources:

www.cdc.gov
www.cfsan.fda.gov
www.mothertobaby.org
www.acog.org
References

- US DHHS/USEPA. 2004 Advice for women who might become pregnant, women who are pregnancy, nursing mothers, young children. www.cfsan.fda.gov
- Harvey et al. Suggested limits to the use of the hot tub and sauna by pregnant women. CMA journal: 1981 (125):5053
- OTIS. Hyperthermia and Pregnancy. www.OTISpregnancy.org