OB Emergencies I

CLERKSHIP TEACHING SERIES

Outline

1. Pre/eclampsia
2. Shoulder dystocia
3. Cord Prolapse

Topics

Pre/eclampsia

Objectives

- Define pre eclampsia and eclampsia and list 4 risk factors for developing it.
- Describe the pathophysiology of pre eclampsia/eclampsia and symptoms, physical findings and lab abnormalities.
- Describe an approach to management and some maternal and fetal complications of PET.

Topics

Open Discussion

- Who has seen a case of pre/eclampsia already?
  - What happened? What were the symptoms, signs, management, and outcome?

OR/AND

- Tell me everything you know about pre/eclampsia

Topics

CLASSIFICATION OF HDP

PREEXISTING HTN
- WITH COMORBID CONDITIONS
- WITH PRE ECLAMPSIA

GESTATIONAL HTN
- WITH COMORBID CONDITIONS
- WITH PRE ECLAMPSIA

PRE ECLAMPSIA = NEW OR WORSENING PROTEIN OR RESISTANT HTN OR ADVERSE CONDITIONS

Diagnosis of HTN

- Systolic > 140 should be followed closely
- Diastolic > 90 avg 2 measurements
- Severe HTN = systolic >160, diastolic> 110
- Office (whitecoat) HTN defined as office diastolic>90 but home BP<135/85

Topics

Clinically Significant Proteinuria

- Proteinuria should be strongly suspected when dipstick> 2+
- Proteinuria defined as > >.3g per 24 hrs or >30mg/mmol urinary creatinine in a spot urine sample
- Not clear whether there is a role for quantification of proteinuria for prognosis

Topics

PET

- Incidence 3-14% worldwide
- Risk factors
- clinical manifestations= the result of micrangiopathy of target organs eg brain, liver, kidney, placenta
- pathogenesis

Topics

Risk Factors for PET

Risk Factors for the Development of Preeclampsia

Nulliparity
Preeclampsia in a previous pregnancy
Age > 35 years or teenager
Ethnicity (African-American, Hispanic)
Family history of pregnancy-induced hypertension
Chronic hypertension
Chronic renal disease
Antiphospholipid antibody syndrome
Vascular or connective tissue disease
Diabetes mellitus
Multifetal gestation
High body mass index
Angiotensinogen gene T235
Homozygous
Heterozygous
Positive rollover, uterine artery Doppler, or angiotensin challenge test
Thrombophilia
Male partner whose previous partner had preeclampsia
Hydrops fetalis
Unexplained abnormal maternal analyte screen for Down syndrome
Unexplained fetal growth restriction

Topics

Pathogenesis of PET

- Impaired trophoblast invasion
- abN trophoblast differentiation
- Placental ischemia
- Immunologic factors
- Genetic factors(2-5X risk w fam hx)
- Systemic endothelial dysfunction
- Treatment=delivery

Topics

Severe Preeclampsia

Criteria for Severe Preeclampsia

New onset proteinuric hypertension and at least one of the following:

Symptoms of central nervous system dysfunction:
Blurred vision, scotomata, altered mental status, severe headache

Symptoms of liver capsule distention:
Right upper quadrant or epigastric pain
Nausea, vomiting

Hepatocellular injury:
Serum transaminase concentration at least twice normal

Severe blood pressure elevation:
Systolic blood pressure ≥160 mm Hg or diastolic ≥110 mm Hg
on two occasions at least six hours apart

Thrombocytopenia:
Less than 100,000 platelets per cubic millimeter

Proteinuria:
Over 5 grams in 24 hours or 3+ or more on two random samples four hours apart

Oliguria < 500 mL in 24 hours

Intrauterine fetal growth restriction

Pulmonary edema or cyanosis

Cerebrovascular accident

Topics

Severe Pre eclampsia

- Severe pre eclampsia should be defined as pre eclampsia with onset < 34 wks with heavy proteinuria or with one or more adverse conditions
- The term PIH should be abandoned

Topics

Complications of PET

- Seizures
- Abruption
- Thrombocytopenia
- Cerebral hemorrhage
- Pulmonary edema
- Liver hemorrhage/rupture
- Renal failure

Topics

Eclampsia

- Generalized seizures in the setting of preeclampsia
- 4-5/10,000 births in developed countries
  antepartum-38-53%
  intrapartum-18-36%
  <48 hrs pp-5-39%
  >48 hrs pp-5-17%

Topics

Treatment of HDP

- Lifestyle changes
- ✓ Insufficient evidence on exercise, workload reduction or stress reduction
- ✓ Some bedrest may be useful in gestational HTN
- ✓ Strict bedrest is NOT recommended in pre eclampsia

Topics

Antihypertensive Therapy

- Severe HTN > 160/110
- ✓ BP should be lowered to < 160 systolic and < 110 diastolic
- ✓ Initial rx with labetolol, nifedipine caps, nifedipine PA tabs or hydralazine
- ✓ $MgSO_4$ is no an anti hypertensive
- ✓ Continuous FHR monitoring until BP stable

Topics

Antihypertensive Therapy

- Non severe HTN(140-159/90-109)
- ✓ Without comorbid conditions BP should be kept at 130-155/80-105
- ✓ With comorbid conditions, BP should be 130-139/80-89
- ✓ Initial rx with methyldopa,labetolol, other beta-blockers, ca channel blockers
- ✓ ACE inhibitors, ARBs, atenolol, prazosin not recommended

Topics

Steroids and Mode of Delivery

- Antenatal corticosteroids should be considered in any pre eclampic < 34 wks
- May be considered in gest HTN <34 wks
- Vag delivery unless ob indications
- Cx ripening if necessary
- Maintain BP < 160/110 thru labor
- Ergometrine contraindicated

Topics

Anesthesia and Fluids

- Inform anesthesia of PET and plt count
- Regional anesthesia is appropriate with plts > 75, even with low dose ASA
- Epidural OK 12 hrs after prophylactic dose of LMWH and 24 hrs after a therapeutic dose
- Early epidural recommended for pain control

Topics

Anesthesia and Fluids

- Minimize iv/oral fluids to avoid pul edema
- Don't routinely treat oliguria (<15 ml/hr) with fluids
- Dopamine and lasix not recommended for persistent oliguria
- Central line not routinely recommended
- Pul art cath not recommended

Topics

Antihypertensives

hydralazine	5 mg iv, 5-10 q 30 min
labetolol	20 mg iv, 20-80 q 20 min
nifedipine	5-10 mg cap q 30 min
diazepam	5-10 mg iv

Topics

MgSO4

- First line treatment of eclampsia
- Mech of action is unclear
  - Impedes acetylcholine release?
  - Decr sens of the motor end plate?
  - Central anticonvulsant effect?
- Recommended as prophylaxis against eclampsia in severe pre eclampsia
- May be considered in non severe PET—decreased eclampsia but increased C/S rates and expense

Topics

MgSo4

- Cochrane reviews: MgSo4 safer and more effective than diazepam or phenytoin for prevention of recurrent seizures
- SE: Mg toxicity
  - Loss of DTRs @ 8-10 mEq/L
  - Respiratory paralysis @10-15 mEq/L
  - Cardiac arrest @ 20-25 mEq/L

Topics

MgSo4

- Monitor:
  - RR hourly
  - Patellar reflexes hourly
  - U/O <20cc/hr--decrease dose
  - Serum Mg levels q 4 hrs 94-8mEq/L)
- Crosses the placenta freely--rarely NN depression
- Calcium gluconate--1g iv over 3-5 min(10cc of 10% soln) antidote!

Topics

Case PET

- You are called to the antenatal floor to see a pt with a BP of 160/110
- 18 y/o primip
- Admitted at 37 wks 2 days ago
- BP 140/90, 150/98, 2+ prot
- 24 hr urine pending
- BW N

Topics

Hx and PEx

- BP 160/114 HR 92
- Feels awful, headache
- RUQ tender
- Reflexes 3+
- Pv 2 cm 70%

Topics

Case PET

- Management?
  - BP control
  - Repeat bloodwork
  - Delivery-induction vs c-section?
  - MgSo4?

Topics

Case 1 PET

- Prior to the antihypertensive you were going to give the pt, she begins to seize…
- Management:
  - Call for help
  - MgSO4 4g bolus iv>>1g/hr
  - O2
  - Pt on her side
  - Mouth guard

Topics

Shoulder Dystocia

Objectives

- List risk factors for shoulder dystocia
- Describe 4 immediate management steps for shoulder dystocia.

Topics

Case – Shoulder Dystocia

- You arrive to take call at 5 pm. The pt in room 1 has been laboring since yesterday morning.
- 32 y/o G2P1 induced for postdates at 41 weeks.
- Healthy pregnancy, no GDM
- Previous SVD 8 lb 4 oz babe
- Fully dilated since noon

Topics

Case

- The nurses have taken her to the back room for forceps
- Deliver the head over 2 contractions with T-M forceps
- "turtle" sign
- You can't reach the anterior shoulder and the baby's face is getting bluer…

Topics

Case

- Management:
  - Call for help, anesthesia, episiotomy
  - McRobert's maneuvre
  - Suprapubic pressure
  - Post shoulder to oblique
  - Deliver the posterior arm
  - Wood's corkscrew maneuvre
  - Zavanelli maneuvre (cephalic replacement)

Topics

Shoulder Dystocia

- 0.2-2% births
- Obstetrical emergency
- Most occur in the absence of risk factors
- Be prepared!
- Goal to prevent fetal asphyxia and avoid trauma

Topics

Shoulder Dystocia

- Definition=difficulty delivering the shoulders (subjective)
- Time to delivery?
  - Avg time from del of head to expulsion of body—24 sec
  - 24 + 2SD=60 sec
  - Prosp series—del of head to body expul time>60—descr a subpop of incr BW, sh dystand low 1 min Apgar

Topics

Shoulder dystocia

- Pathophysiology
- Risk Factors (50% cases have NO risk factors)
  - Macrosomia
  - DM
  - Operative vaginal delivery
  - Previous sh dystocia
  - Postdates
  - Male fetal gender

Topics

Macrosomia

- Can be defined as
  - EFW >4500g (1.5%)
  - EFW >4000g (10%)
  - EFW > 90th%ile for GA
- Clinical EFW as accurate as U/S biometry at upper wt ranges
- 95% of infants > 4000g will NOT have sh dystocia
- 50% cases occur in BW < 4000g

Topics

Rate Relationship Between Birth Weight and Shoulder Dystocia

Birth weight, grams	Nondiabetic women, percent	Diabetic women, percent
Less than 4000	0.1 to 1.1	0.6 to 3.7
4000 to 4449	1.1 to 10.0	4.9 to 23.1
4500 or more	4.1 to 22.6	20.0 to 50.0

Risk Factors for Macrosomia

High body mass index
Multiparity
Advanced maternal age
Maternal diabetes
Postterm pregnancy
Nonsmoker
Male infant
Low caffeine intake
Married
Previous macrosomic infant
Preeclampsia
Excessive weight gain in pregnancy
Obesity
Ethnicity
Maternal birthweight over 4000 grams

Macrosomia

- Review of the literature: labor induction for suspected macrosomia does NOT decr rate of sh dystocia but does incr C/S rates
- Prophylactic C/S for EFW > 5000 g in non diabetic pts and > 4500g in diabetic pts is not unreasonable

Topics

Diabetes

- Maternal diabetes increases the rate of sh dystocia 2-6 X
- Chest to head and shoulder to head ratios are increased in infants of diabetic mothers

Topics

Op Vag Delivery

- Combination of macrosomia, prolonged second stage and mid-pelvic delivery----associated with a 21% inc of shoulder dystocia
- Classic study Benedetti, Gabbe O&G 1978

Topics

Previous Sh Dystocia

- Incidence of recurrence 1-17%
- May be an underestimate—many mothers choose C/S for next delivery
- Birth trauma more likely in the recurrent episode 29 vs 19%
- Incr mat pre preg wt
- Incr mat wt gain in preg
- Incr BW

Topics

Postdates

- A large proportion of sh dystocia cases occur in posterm pregnancies
- The majority of postterm preg are uncomplicated
- Cohort study of term and postterm births from Norway reported a RR 1.3 for sh dystocia in the postterm group

Topics

Male Fetal Gender

- Freq of males 55-68% in sh dystocia cases
- Freq males 51% in overall birth pop
- 70% babies > 4500g are male
- Shoulder dimensions? As in IDM?

Topics

Management of Sh Dystocia

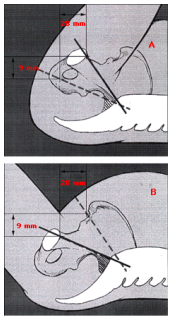
- After del of the head umb art pH falls .04 pH units per min
- 7 min to deliver a previously well-oxygenated infant before asphyxia occurs
- DON'T! pull on the neck/head
  put fundal pressure
- Call for help
- Re-position mom
- episiotomy

Topics

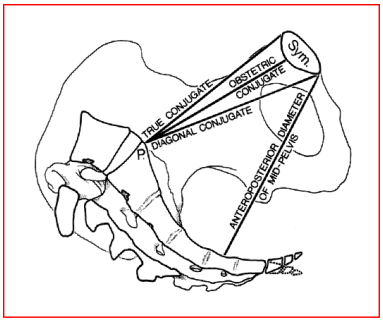
Management

- Suprapubic pressure—down and lateral to adduct the shoulders and disimpact the ant shoulder
- McRobert's maneuvre-hyperflex the pt's legs
  - Straightens the lumbosacral lordosis
  - Widens the pelvis to it's max dimension
  - Incr pushing efficency
  - Successful alone in 42% cases

Topics



Effect of McRoberts positioning relative to lithotomy position A: The patient's legs have been hyperflexed by assistants. The 16 degree ratation for a 10.5-cm obstetric conjugate (ideally) moves the symphisis pubis 9 mm anteriorly and 28 mm in a cephalad direction. B: Lithotomy position. Reproduced with permission from: Poggi, SH, Spong, CY, Allen, AH. Prioritizing posterior arm delivery during severe shoulder dystocia. Obstet Gynecol 2003; 101:1068. Copyright © 2003 American College of Obstetricians and Gynecologists.



Pelvic Inlet Three anteroposterior diameters of the pelvic inlet are illustrated: the true conjugate, the obstetrically important obstetric conjugate, the obstetrically important obstetric conjugate, and the clinically measurable diagonal conjugate. The anteroposterior diameter of the mid-pelvis is also shown (P: sacral promontory; Sym: symphysis pubis). Reproduced with permission from: Pritchard, JA, MacDonald, PC. Williams Obstetrics, 16th Edition, Appleton-Century-Crofts, New York 1980. Copyright ©1980 McGraw Hill. p. 278.

Management

- Delivery of the post arm
- Wood's corkscrew maneuvre
- Gaskin all-fours
- Clavicular fracture-shortens the bisacromial diameter, risk to subclavians
- Zavanelli maneuvre
- Symphysiotomy-rare

Topics

Complications of Sh Dystocia

- Fetal
  - Brachial plexus injury-<10% permanent disabilty
  - Fractures-clavicular, humeral, heal readily
  - Asphyxia-hypoxic brain damage
  - Death is rare

Topics

Complications of Sh Dystocia

- Maternal
  - Pph
  - Genital tract lacerations

Topics

Cord prolapse

Objectives

- List 4 risk factors for cord prolapse
- Describe the immediate management of it.

Topics

Case

- Your resident in the DR asks you to rupture membranes on a pt waiting to be induced for postdates.
- You can't feel the presenting part but the cx is dilated 4 cm and you easily rupture the membranes…
- You feel something slimy and pulsating fall into your hand as it leaves the vagina…what is it? And what now??

Topics

Cord prolapse

- 1/300 to 1/600 deliveries
- Predisposing Factors
  - Malpresentation
  - Prematurity
  - abN fetus
  - Multiple pregnancy
  - Polyhydramnios
  - PROM,ARM
  - Obstetrical procedures

Topics

Cord Prolapse

- Perinatal mortality 10-20%
- Is the baby viable?
- Relieve cord compression
  - Replace the cord in the vagina
  - Elevate the presenting part
  - Trendelenburg, knee-chest or Sims
  - C/S

Topics

Resources

- Obstetrics and Gynecology: Current Diagnosis and Treatment. Lange 10th Edition, 2007. Section III, Pregnancy Risk.
- Essential Management of Obstetric Emergencies. Baskett, T F. Clinical Press Limited, 3rd Ed., 1999. pages 64-87, 130-151, 233-249.

Topics