RESPIRATORY DISORDERS

DR. MOATH SALEH BANI HANI

Respiratory changes in pregnancy

Increase	same	decrease
O2 demand by 20%	Vital capacity	Total lung vol. (200ml)
Tidal vol. (30-40%)	Respiratory rate	Chest compliance
Inspiratory reserve vol.	Lung compliance	Residual vol. by 200 ml
Respiratory minute vol.	FEV1	ERV

- Breathing more diaphragmatic than thoracic .
- Anatomical changes :

  -engorged turbinates

  -diaphragm elevated 4-5 cm , costal angle widens .

  -decrease airway resistance
- State of hyperventilation (progesterone increase respiratory drive) causes fall in paCO2 , which results in **CHRONIC RESPIRATORY ALKALOSIS**

Respiratory changes in pregnancy

	Pre-pregnancy	By term
paO2	80-98 mmhg	98 mmhg
paCO2	35-45 mmhg	28-32 mmhg
Hco3	24-30 mmol/l	18-21 mmol/l
Ph	7.35 -7.45	7.4-7.45 (alkalosis)

Investigating pulmonary disease in pregnancy

- The physiological changes occurring in pregnancy must be considered when interpreting the result of investigation .(abg ,xray)
- Chest xray :cardio-thoracic ratio is elevated , vascular markings more prominent and small pleural effusion is possible .
- The maximum safe radiological exposure is 5 cGy (centigray)
- Lateral chest xray & mobile xray carries higher exposure rates .
- V/Q scan can be omitted .
- MRI is safe .
- Ct scan can be done in some cases if the indication is strong enough .

Asthma

- The incidence of asthma appears to be increasing globally .
- Asthma is the respiratory illness most likely to be encountered during pregnancy .

- How the patient present ?

- asthma will usually have been diagnosed prior to pregnancy and treatment already instituted . However , this is not always the case .

- signs and symptoms may present for the first time in pregnancy and are the same in non-pregnant :

chest tightness and wheeziness

cough

breathlessness , esp. in the morning .

Effect of pregnancy on asthma

- Asthma may deteriorate ,stay the same , improve in equal measure
- Women with severe asthma seem more likely to deteriorate , those showing improvement during pregnancy are more likely to suffer postpartum relapse .
- Approximately 1 in 10 women with asthma will suffer an acute attack in **labour .**

The effect of asthma on pregnancy

- The precise effect of asthma has on pregnancy is unclear .
- In severe asthma :

  - risk of HTN

  -IUGR

  -PROM

- SO , increased surveillance is justified .

Management

- The management of asthma in pregnancy is essentially the same as in the non-pregnant patient .
- **PREVENTION is the key** , and known triggers should be avoided .

Allergens	**Pollen , dust**
occupational	Industrial chemicals , metal salt , wood dust
Infection	Viral or bacterial
Environmental pollution	Tobacco smoke
Drugs	Aspirin , NSAID , beta-blocker
Emotional stress	
Exercise and cold air	**ALL OF THESE SHOULD BE AVOIDED**

Pharmacological Management

- In general , the medication used to treat asthma are safe in pregnancy .
- 1) short/long acting b2-agonists .
- 2)inhaled corticosteroid .
- 3)methylxanthines
- 4)theophylline (may cause neonatal irritability and apnoea , however , women requiring it to control asthma should stay on it and measure serum levels)
- 5)prednisolone is the oral steroid of choice for pregnancy (cleft lip , iugr)
- **So , you should always assess the risks and the benefit in each case** .

Acute asthma exacerbation

Uncontrolled asthma	Acute severe attackk	Life-threatening asthma
Speech must be normal	Unable to complete sentences	Silent chest ,cyanosis ,bradycardia
HR LESS THAN 110 &RR LESS THAN 25 /MIN	Pulse more than 110 , RR more than 25	
PEAK FLOW MORE THAN 50 OF PREDICTED	PEAK FLOW less THAN 50 OF PREDICTED	PEAK FLOW less THAN 33 OF PREDICTED
TX : nebulized salbutamol or terbutaline	Tx:o2 ,nebulizer and oral prednisolone	Tx :o2 ,nebuliser , iv aminophylline and oral or iv hydrocortisone

Managing pregnancy in asthmatic patient

- Patient with well-controlled mild or moderate asthma will have normal outcome with standard antenatal care .
- For those with poorly controlled or severe asthma , care must be **MULTIDISCILINARY ,** preferably through a high-risk antenatal clinc .
- Baseline investigations, such as peak flow measurement should be obtained at booking .
- Counsel the patient about the possible risks on her and her baby .
- IOL and CS will mostly be reserved for obstetric indications.
- No form of analgesia is contraindicated , although regional anesthesia is preferable rather than general anesthesia .

Managing pregnancy in asthmatic patient

- Women taking prednisolone should be screened for glucose intolerance and measure taken to control this if it is found .
- Those taking prednisolone (more than 7.5 mg for more than 2 weeks)should be given 100 mg hydrocortisone (stress dose to prevent adrenal crisis) at the onset of labor or surgery .
- PG-E2 may safely be used for IOL .
- Pg-f2 alpha (carboprost)**should be avoided** (bronchospasm)
- The risk of postnatal deterioration should be discussed with the patient .
- Breast feeding is NOT contraindicated with any of the medication used .

Cystic fibrosis

- Is an autosomal recessive disorder , affects lungs (mostly) , pancreas, liver , kidneys and intestine .

- Characterized by abnormal epithelial cell chloride transport and thickened glandular secretion .

- Diagnosis is confirmed by

  -elevated sweat chloride concentration with iontophoresis

  -mutation analysis of the cystic fibrosis transmembrane conductance regulator gene (ch.7)

Cystic fibrosis

- Hallmak of CF is viscid (excessive) mucus production , which block the ducts , leading to :

- recurrent chest infection , poor alveolar gas exchange .

- infertility (congenital absence of vas deferens in males , thickened cervical mucus in female)

-pancreatitis .

-intestinal obstruction , malabsorption

-diabetes

-osteoporosis

Cystic fibrosis

- Due to improved treatment modalities ,women with CF are living longer –median survival age is 29 –and they are more frequently reaching childbearing age .
- Although men with cystic fibrosis are usually infertile , this is not the case for women . Menarche is delayed by an average of 2 years and the incidence of anovulatory cycle and secondary amenorrhoea is indeed higher .

Effect of pregnancy on Cystic fibrosis

- Pregnancy was not associated with immediate or medium-term adverse effect for CF patient .
- The spectrum of disease phenotype and severity is highly varied depending on :

-absolute pre-pregnancy pulmonary function

-presence of pulmonary hypertention .

-degree of pancreatic isufficiency .

-presence of liver disease and portal htn

-BMI

-DM

MANAGEMENT OF Cystic fibrosis DURING PREGNANCY

- Should be managed by **MULTIDISCILINARY team .**
- A full discussion should take place prior to conception .
- Patient with poor lung function or pulmonary htn may be advised to avoid pregnancy .
- The issue of prenatal screening should be raised .
- Vigilance monitor must be maintained for the complication of CF .
- Chest physiotherapy and bronchial drainage should continue .
- Serial lung function test should be performed at regular intervals .
- Careful surveillance for signs of chest infection (pseudomonas aeruginosa is the most common cause)

MANAGEMENT OF Cystic fibrosis DURING PREGNANCY

- Cardiovascular status should be observed during pregnancy , preferably by echocardiography .
- Pancreatic enzymes should be continued and insulin level adjusted .
- Advice from dieticians will be essential to maintain caloric intake .
- Regular fetal monitoring with growth scan is advisable .
- Ideally ,IOL and CS are performed only for obstetric reason .however deterioration in lung function may prompt intervention.
- General anesthesia should be avoided where possible .
- Facial oxygen may be required in labor , and exhaustion should be prevented by instrumental delivery (prolonged Valsalva manoeuvers may predispose pneumothoraces)

THANK YOU

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