Case study: hypertension in pregnancy

Main Complaint

My patient Madam Siti a 31 year old Indonesian maid Gravida 3 para 2 at 38 weeks and 1day of Period of Amenorrhoea (POA) was admitted to the ward for blood pressure stabilization and induction of labour (IOL).

History of Presenting Illness

She was referred from antenatal clinic during follow up in PPUKM on 29/11/2010. During the check up at the follow up, her vital sign showed she was afebrile, pulse rate of 90beats per minute and blood pressure was noted to be 160/100mmHg and no abnormality was found in the urine.

During booking her blood pressure was noted to be 100/70mmHg and she was normotensive throughout the pregnancy up until at 38weeks and 1day of POA.

She complained to have frontal headache and nausea 2 days prior to admission. She denied symptoms of impending eclampsia such as blurring of vision, epigastric pain and vomiting. There was also no dizziness, shortness of breath, chest pain, reduced urine frequency and leg swelling. She also had per vaginal discharge which was whitish and creamy in nature, no foul smelling and no pruritus vulvae. There was no urinary tract infection symptoms such as urgency and dysuria.

Fetal movement was good.

She was admitted to the ward for further management.

Antenatal History

This is an unplanned but wanted pregnancy. Her urine pregnancy test (UPT) was positive at 6weeks of POA. Dating scan done at 15weeks of POA which correspond to date. Booking was done at 15weeks of POA at private clinic at Medviron.

Antenatal screening done showed that:

Blood Pressure : 110/70mmHg

Haemoglobin level : 12. 8g/dL

Height : 158cm

Weight : Pre : 62kg Current : 69kg

Blood Group : O Positive

VDRL/HIV/HEP B : Non Reactive

Urine Albumin/Sugar : Nil

No MGTT was done. Despite having a family history of diabetes mellitus.

Latest scan done at 38 weeks and 1day POA and all parameters are correspond to date. It was a singleton fetus on longitudinal lie and cephalic presentation. Fetal heart and fetal movement are seen. Amniotic Fluid Index are 11. Estimated fetal weight was 3. 3kg and placenta was on anterior upper segment.

Otherwise, antenatal visits are uneventful.

Past Obstetric History

On 1999, she had a full term normal pregnancy and delivered a baby girl by Spontaneous Vaginal Delivery (SVD) at a hospital in Indonesia and weight of the baby was 2. 6kg and is alive and well.

On 2007, she also had a full term normal pregnancy and delivered a baby boy by spontaneous vaginal delivery also at Indonesia. The baby weight 2. 3kg and currently is alive and well.

Both of her children stays with her mother at Indonesia.

Past Gynaecology History

She attained her menarche at the age of 13year old with 28 to 30days regular cycle with 7days of menses. She denied dysmenorrhoea, menorrhagia, intermenstrual bleeding, dyspareunia and postcoital bleeding.

As for contraception, she uses Implanon for 4years from 2002 to 2006 between the first and the second pregnancy. She was then on Oral Contraceptive Pills for 2months and had stop taking them afterward until today. After this pregnancy, she is keen to take Intrauterine Contraceptive Device (IUCD).

She had never had pap smear done before.

Past Medical History

Nil.

Past Surgical History

Nil.

Allergy and Drug History

No known drug allergy or food allergy.

Family History

Her mother is alive and was diagnosed to have diabetes mellitus and hypertension and currently on medication. Her father died on 2007 due to renal failure.

She had 3siblings and currently all of them are alive and well.

Social History

She has been married for 12years and came to Malaysia on 2006 which was 4years ago.

She lives in a terrace house at Cheras and worked as a maid.

Her husband came to Malaysia 5years ago but had recently go back to Indonesia 2months ago. He previously worked as a contractor for the same employer. He planned to return to Malaysia after his permit is renewed.

Both of them does not smoke or consumed alcohol.

Both of their children were in Indonesia and are taken care by her mother.

Relevant Clinical Examination

General

On examination, she was alert, conscious and she was not pale or jaundiced. Her Blood Pressure was 142/92mmHg lying and 152/104mmHg standing. Her pulse rate was 90beats per minute and respiratory rate was 20breath per

minute. She was afebrile. Her current weight was 69kg. There was no pedal oedema noted.

Thyroid Gland

There was no scar, lump or dilated veins noted around the area of the neck. There was no lymphadenopathy noted.

Breast

On inspection, both breast were symmetrical and bilaterally in size. Both her nipple were not hyperpigmented or retracted. There was no nipple discharge. Her breast were non tender and no mass was palpable.

Cardiovascular System

On inspection of the hand, there was no clubbing and peripheral cyanosis. Inspection of the mouth showed that there was no central cyanosis and hydration status was good. There was no surgical scar and no notable abnormalities detected on the praecordium. Jugular Venous Pressure was not raised. Peripheral pulses were present with normal rhythm and good volume. There was no radio-radial delay or radio femoral delay. There was no collapsing pulse.

On palpation, apex beat was not displaced it was palpable at the 5th intercostals space and left midclavicular line. There was no parasternal heave and thrills detected.

On auscultation, the first and second heart sounds were heard with no murmur or added sound heard.

Respiratory System

On inspection, the chest moved bilateral symmetrically with inspiration. There was no scars and deformities noted. She did not use accessory muscles on breathing.

On palpation, her trachea was not deviated. Chest expansion was equal bilaterally. Air entry was good and equal bilaterally as evidenced by normal vocal fremitus and vocal resonance.

Percussion of both lungs were resonant.

There were vesical breath sounds equal on both sides with no added sounds on auscultation.

Neurological System

She was orientated to time, place, and person. All cranial nerves were intact. Both her upper and lower limbs were normal. Muscle tones, power, and reflexes were all good and normal.

Abdominal Examination

On inspection, the abdomen was distended by gravid uterus as evidenced by cutaneous signs of pregnancy such as linea nigra and striae gravidarum. The umbilicus is centrally located and flat. No scars noted and no dilated veins seen.

On palpation, her abdomen was soft and non tender and uterus was not irritable. Clinical fundal height revealed that the uterus was 38weeks in size and was correspond to date. Symphysiofundal height was 37cm.

Palpation of the fetus showed that it was a singleton in longitudinal lie with cephalic presentation. The head was 3/5 palpable and not engaged. The fetal back was on the maternal left side. The liquor was adequate and estimated fetal weight was 3. 2 to 3. 4kg.

Pelvic Examination

Vaginal examination was not done.

Per Rectal Examination

Per rectal examination was not done.

Summary of Case

31year old maid gravida3 para2 at 38weeks and 1day POA admitted for blood pressure stabilization and induction of labour (IOL) due to gestational hypertention.

Diagnosis and Differential Diagnosis

Provisional Diagnosis

Gestational Hypertension:

She develop hypertension which is a blood pressure of 140/90mmHg aand above recorded on 2 separate occasions at least 4hours apart.

Hypertension occur in second half of pregnancy which is after 20weeks of gestation.

She is previously normotensive.

There is absence of proteinuria

She had risk factor; family history of hypertension.

Differential Diagnosis

Pre-eclampsia:

Points for:

Hypertension at least 140/90mmHg recorded on 2 separate occasions at least 4hours apart.

Hypertension occur at second half of pregnancy, after 20weeks gestation.

She is previously normotensive.

She had risk factor; family history of hypertension.

Points against:

There was absence of proteinuria of at least 300mg Protein in a 24hour collection of urine.

She had no risk factor such as pre-existing hypertension or pre-eclampsia.

Chronic Hypertension:

Points for:

She has a family history of hypertension.

Points against:

She is normotensive prior to pregnancy.

She had no other disease such as renal or connective tissue disorders that can lead to hypertension.

Relevant Investigations with Reasons

Full Blood Count

To check whether patient is anaemic or not (Hb).

To confirm patient is not on any infection such as urinary tract infection (WBC).

White Cell Count + 14. 2 x 109/L

Red Cell Count – 4. 18 x 1012/L

Haemoglobin 12. 3 g/dL

MCV 37. 1%

MCH 88. 7 Fl

MCHC 29. 3 Pg

RDW 33. 0 g/dL

Mean Platelet Volume 8. 0 Fl

Platelet 302 x 109 /L

Neutrophils ++ 10. 3 x 109 /L

Eosinophils 0. 4 x 109 /L

Basophils – 0. 0 x 109 /L

Lymphocytes 2. 6 x 109 /L

Monocytes 0. 9 x 109 /L

Nucleated RBC 0 x 109 /L

Comment:

There is a reduction of Red Cell count. This is due to pregnancy, as there is haemodilutional effect due to an increase in plasma volume. Patient is not anaemic as haemoglobin is on the normal range. However, there is leukocytosis mainly the neutrophils. This suggest an infection most likely bacterial in origin such as urinary tract infection.

Renal profle

To exclude secondary cause of hypertension due to renal damage.

To detect abnormality in the level of serum urea and creatinine that will indicate renal damage or failure.

Sodium 139 mmol/L

Potassium 4. 0 mmol/L

Urea – 2. 3 mmol/L

Creatinine 54 umol/L

Comment:

There is hypouremia. This is normal in pregnancy, as there will be an increase in Glomerular Filtration Rate (GFR), therefore there will an increase in clearence of urea in the body. Besides that, a reduction in deamination process in the maternal body will also cause blood urea to be reduce.

Liver Function Test

To see whether patient had any liver damage

Albumin – 33 g/L

Total Protein 68g/L

Bilirubin toral 6 umol/L

ALT 19 u/L

ALP + 141 u/L

Comment:

There is hypoalbuminaemia. There is increase level of Alkaline Phosphatase (ALP) due to placenta production. Thus, making it a normal physiological reaction.

Serum Uric Acid

Serum uric acid is a sensitive indicator of renal damage in pre-eclampsia.

Uric Acid 371 umol/L

Comment:

Serum uric acid level is normal. Suggesting there is no renal damage.

PE/ Pre-eclampsia Chart

To monitor her blood pressure on lying and standing

To monitor her urine whether there is albuminuria or not.

To detect pre-eclampsia.

Result:

Other than the increase in blood pressure prior to delivery, there is no albuminuria noted. Therefore, patient did not have pre-eclampsia.

Fetal Kick Chart

To monitor the fetal well being. If there is decreased fetal activity, it may indicate some degree of fetal compromise.

Cardiotocography (CTG)

To monitor the heart rate and contraction of the uterus to detect abnormalities in the pregnancy.

Ultrasound.

To assess the fetal growth.

Identify The Problem in Terms of Priority

Gestational Hypertension.

Induction of labour in gestational hypertension.

Immediate and Subsequent Management

Admit to ward for BP monitoring and stabilization.

Monitor for any signs and symptoms of impending eclampsia.

Bed rest.

BP monitoring 2hourly for 24hours. If blood pressure reduce or return to normal patient can be discharge and to come again for antenatal follow up. Bed rest continued if persistent.

Antihypertensive medication given if BP consistently noted to be 150/100mmHg. Preferred agent are alpha and beta blockers agent such as labetolol or methyldopa.

Pre-eclampsia chart to exclude pre-eclampsia.

CTG and fetal kick chart monitoring.

Gestational hypertension not resolve, induction of labour is recommended.

If induction of labour fails or spontaneous delivery is not possible, prepare for lower segment caesarean section (LSCS).

Final Conclusion/ Plan for Further Management/ Patient Progress

On admission on 29 November 2010, her blood pressure (BP) was high which was 142/92mmHg lying and 152/104mmHg standing. She was then given 200mg labetolol TDS. Pre-eclampsia chart done to monitor albumin in the urine. She is also monitored on signs and symptoms of impending eclampsia.

Her BP was monitored half hourly for 2hour and induction of labour (IOL) is done soon after BP is stabilize.

On the next day , 7. 15am, Bishop’s Score was done and result was 2/13. Therefore cervix was not favourable. First 3mg of Prostin tablet was inserted into the posterior fornix. CTG was then done after 1hour to monitor for uterine hyperstimulation of fetal distress. The abdomen and cervix will be reassess in 6hours time. Tablet labetolol was continued and signs and symptoms of impending eclampsia (IE) was monitored.

Six hour later, patient had contraction (irregular) but no leaking liquor noted. There was no signs and symptoms of IE, per vaginal discharge and fetal movement was good. Her BP was 129/92mmHg which had decreased slightly. On palpation, her abdomen was soft and non tender. Uterus was 38weeks, presenting part was 3/5 palpable. Bishop’s Score was done again and cervix is still unfavourable at 3/13. Second prostin was inserted at the posterior fornix. CTG was done 1hour post prostin for monitoring.

Six hour later, she had 2 contraction in 10 minutes and it was moderate. There was no leaking, no per vaginal bleeding and the fetal movement was good. Her BP on lying was 112/86mmHg and 122/90mmHg on standing, well controlled BP. Vaginal examination revealed normal vulvovaginal, cervix dilated to 1cm, os was 3cm membrane intact and station was -2.

2hour later, the contraction was 3 in 10minutes and no leaking liquor. Vaginal examination showed 1cm cervix, 4cm os. Artificial Rupture of Membrane (ARM) was done. Clear liquor was noted. Patient was in active phase of labour and was sent to the labour room for delivery.

Entonox was given for pain management in the labour room. Contraction was 3 in 10 minutes with moderate intensity and os was 4cm. one and a half hour later, patient complained of having strong contraction and felt the urge to bear down. Vaginal examination done and os was fully dilated at 10cm.

She delivered a baby boy weighing 2. 53kg with apgar score of 8 in 1minute and 9 in 5minutes. The patient developed first degree tear, placenta was complete weighing 590gm. Estimated blood loss is 250cc. Cord pH was 7. 312.

In the ward, day 1 post SVD she was alert, conscious, comfortable and was not pale. Her BP was 118/83mmHg which was normal and her pulse rate was 96beats per minute. She was afebrile. Abdominal examination showed that her abdomen soft and non tender. The uterus was well contracted at 18weeks in size. The lochia was normal. Breastfeeding was established and she was ambulating well. The patient can tolerate orally and had pass urine and bowel movement.

She had completed her family size and plans to use intrauterine contraceptive device (IUCD) for contraception.

Prescription of labetolol was stopped as her BP has been stable and she had delivered her baby. She was then allowed for discharge and to come again 2weeks later to review her BP. She was given hematinics to increase haemoglobin level.

Discharge Summary

Name : Siti Arifah Age : 31

MRN : N285492 Race : Indonesian

Gender : Female Discharge Date: 01/12/2010

Case Summary

Date of admission : 29/11/2010

Date of delivery : 30/11. 2010 at 22: 35

Date of Discharge ; 01/12/2010

31year old, para 3 @38weeks and 4days of POA, post spontaneous vaginal delivery (SVD) with first degree tear diagnosed with gestational hypertension @ 38weeks.

Antenatally,

Dated at 15weeks.

Antenatal clinic uneventful.

Booking blood pressure (BP) – 100/70mmHg. Has been normotensive throughout pregnancy (BP range 110-120/70-80mmHg) until on 38weeks, noted that BP at clinic 160/100mmHg. Tablet labetolol 200mg given stat at the clinic.

Admitted to ward for BP stabilization and started on tablet labetolol 200mg TDS.

Medical/surgical History

Nil.

VDRL/HIV/Hep B

Non reactive.

Admitted in for BP stabilization. Before admit and in the ward, patient complaint of headache. On day 2 of admission, cardiotocograph (CTG) showed sleeping pattern. Opted for induction of labour (IOL). Prostin inserted 2 times. After 7hours of second prostin insertion, patient went into active phase of labour, os 4cm. Artificial Rupture of Membrane (ARM) was done with clear liquor. Os fully after 1 hour 30minutes without augmentation. Second stage 10 minutes. Third stage 13minutes. She successfully delivered a baby boy of:

Weight : 2. 73kg

pH : 7. 312

TSH : pending

G6PD : normal

Estimated Blood Loss (EBL) : 250cc

Currently she is normotensive. There is no acute complaints. No signs and symptoms to suggest of anaemia. She is tolerating orally and ambulating well. Passing urine/bowel open without problems and there is no excessive bleeding.

Her baby is well and active, suckling well. BCG/Hepatitis 1st dose has been given.

On examination,

Her vital signs are stable. She is pink and alert. Abdomen soft and non tender. Uterus well contracted and 18weeks in size. There is no excessive bleeding. Lochia is normal.

Mother Haemoglobin: 12. 3g/dL

Contraception: Intrauterine contraceptive device (IUCD)

Plan;

Off labetolol

EOD BP at local clinic

To come again (TCA) in 2weeks to review BP.

Continue Haematinics.

Medications

Tablet Hematinics OD

Tablet Gelusil Ponstan TDS

Syrup lactulose 15mls TDS

Diagnosis:

Post- SVD with first degree tear.

Prepared by,

Connie

(CONNIE KABINCONG)

House Officer

Obstetric and Gynaecology ward

UKMMC

Referral to Doctor For Continued Management

To: Medical officer of Obstetric and Gynaecology Department

Date: 01 December 2010

Dear Doctor,

Regarding: Siti Arifah, N285492

Thank you for seeing this patient, Siti Arifah, a 31year old Indonesian maid, para 3 post spontaneous vaginal delivery (SVD) with first degree tear at 38weeks and 2days of period of amenorrhoea (POA). She was admitted for blood pressure stabilization and induction of labour. She was referred from antenatal clinic when it was noted that her blood pressure was high which was 160/100mmHg. She never had history of hypertension before until on 38weeks and 1day of POA. However, she had a family history of hypertension. She was given labetolol for blood pressure stabilization and was given tablet Prostin 2times to induce the labour. She was then delivered a baby boy by SVD and her baby was alive and well. Her blood pressure was 118/83mmHg after the delivery. She was then stopped on taking Labetolol.

Kindly see this patient for blood pressure monitoring and to exclude pre-existing hypertension in this patient. Thank you.

Regards,

Connie

(CONNIE KABINCONG)

House Officer

Obstetric and Gynaecology Ward

UKMMC

Mock Prescription: For Patient on Discharge

Name : Siti Arifah Age : 31

MRN : N285492 Race : Indonesian

Gender : Female Discharge Date: 01/12/2010

Tablet Haematinics OD

Tablet Gelusil/Ponstan TDS

Syrup Lactulose 15mls TDS

By,

Connie

(CONNIE KABINCONG)

House Officer

Obstetric and Gynaecology Ward

UKMMC

Professionalism Component

Communication Issues

As communication will be crucial in our future career as a doctor, a good basic has to be established now. As a good communicator we must be able to convey our message and information to our patient either in the form of words or from plain body language. Fortunately, my patient Madam Siti was very cooperative. I was able to establish rapport with her rather rapidly. She became more comfortable while answering my questions.

Management wise, I found that she was well assured and well informed about what was being done for her. The doctor in charged informed her about her condition and told her about the possible complication that may arise and enough reassurance was given.

Psychosocially, she did admits that she was a little scared of the possible complication that might affect she and the baby. Furthermore, her husband was not able to be by her side for moral support. I spent some times consoling her and she felt better afterward.

Financially speaking, she and her husband total household income is currently not sufficient as she only earn approximately RM1000 per month and her husband is currently unemployed and waiting for his permit to return to work to Malaysia. However she claimed that her employer are offering to help her out during her confinement period.

Spiritual Issues

She is a very religious woman and has a strong spiritual side. She believe that God will helped her through this challenge and it had made her become quite cheerful and optimist despite of her current state.

Ethical Issues

As medical student, we have been reminded from time to time that medical ethics are crucial in order to be good doctors in the future. A good doctor should always put the patient's life at the highest priority and respect the patient's right to autonomy, information and privacy. Madam Siti should be counseled on options, pros and cons of the choices and the choice that made by her with guidance and advice by the doctor. No information should be withheld from her.

Ethically as patient they also entitled to their privacy and confidentiality. Unfortunately, in a teaching hospital such as HUKM, patients' privacy is sometimes compromised. Madam Siti was continuously approached by the students who wished to clerk her although it is very tiring to repeat all the words again and again, she still can tolerate it. Unfortunately there isn't much things I can do to help her but I can learn from this by learning not to disturb patient during the visiting hours or when they are tired while still grabbing every opportunity to learn in the ward.

Professional Judgement

In managing obstetric patient, we must take into account that we are not only dealing with one life but two. Thus extra caution must be taken. Especially with Madam Siti condition, as hypertension in pregnancy if it is not

well controlled and monitored it could easily turns into something terrible very quickly.

I felt that the management of Madam Siti was fair, she was properly counseled on maternal and fetal complication that could arise from hypertension in pregnancy. She was also well informed on the results of all the investigation done on her and her current management.

Critical Appraisal

Hypertension in pregnancy is defined as Blood Pressure more than or equal to 140/90mmHg in previously normotensive women that occur in 20th week of gestation without proteinuria until 6weeks postpartum. Or alternatively, a rise in systolic BP of more than 25mmHg or diastolic BP of more than 15mmHg compared with booking BP. Hypertension in pregnancy caused an increase in maternal and perinatal morbidity and mortality.

Normal BP usually never went beyond 120/80mmHg. However in pregnancy plasma volume increases on an average 1200ml. So vasodilatation is needed to maintain the peripheral pressure. If the vasodilatation action is counteract by arterial spasm, hypertension occurs and lead to reduction in perfusion to all organ. This includes the uterus and placental site.

Hypertension in pregnancy can be divided to pre-eclampsia, gestational hypertension, chronic hypertention, pre-eclampsia superimposed of chronic hypertension.

Pre-eclampsia is defined as hypertension of at least 140/90mmHg recorded on 2 separate occasions with the significant proteinuria of more than 300mg

in 24hours urine collection after 20weeks of gestation in a previously normotensive women and resolve completely by 6weeks postpartum. Eclampsia is a serious complication and life threathening complication of pre-eclampsia. It is defined as convulsions occurs in a woman with pre-established pre-eclampsia in the absence of any neurological or metabolic cause.

Chronic hypertension is caused either due to essential hypertension or secondary hypertension. Secondary causes include renal artery Stenosis, glomerulonephritis, cushing syndrome and pheochromocytoma. Chronic hypertension is a hypertension diagnosed prior to 20weeks of gestation or history of hypertension preconception and de novo hypertension in late gestation that fails to resolve postpartumly.

Pre-eclampsia superimposed on chronic hypertension is diagnosed when there is:

De novo proteinuria after 20week gestation

Sudden increase in magnitude of hypertension

Appearance of features of pre-eclampsia-eclampsia

Sudden increase in proteinuria in women with preexisting proteinuria in early gestation in women with chronic hypertension.

Risk factors for women to develop hypertension in pregnancy can be divided into obstetric, medicaland social aetiology. In obstetric aetiology, the risk factor can be further divided into maternal and fetal risk factor where:

Maternal risk factors are:

Nulliparity or primigravida

Advanced maternal age or extreme age (<15 or > 35year old)

Family history of hypertension, pregnancy induced hypertension, pre-eclampsia and eclampsia.

Previous history of gestational hypertension, pre-eclampsia, eclampsia.

Maternal obesity (> 80kg)

Fetal risk factors are:

Multiple pregnancy

Molar pregnancy

Hydrops fetalis

From medical aetiology the risk factors are:

Diabetes mellitus or gestational diabetes mellitus

Established hypertension

Connective tissue disease

Renal disease: glomerulonephritis, renal artery Stenosis

Endocrine disease: cushing’s syndrome, pheochromocytoma.

From social aetiology the risk factors are:

Smoking

Alcohol consumption

Complication that can arise from hypertension in pregnancy are eclampsia, intrauterine growth restriction, renal failure, thrombocytopenia, abruption placenta, subcapsular haemrrhage and liver dysfunction.

Treatment wise, patient need to be admitted to hospital first fo r BP monitoring and stabilization. Used of antihypertensive agents that may be used in hypertension in pregnancy is Labetolol, which is a combined alpha and beta blocker. By blocking alpha adrenoreceptor in the peripheral arteries, it reduced the peripheral resistance. At the same time beta blocking effect protects the heart from reflex sympathetic drive normally induced by peripheral vasodilatation. Nifedipine, a calcium channel blocker can be use as an alternative. Delivery is the ultimate treatment of hypertensive in pregnancy and its timing is dependent on the observation of fetal and maternal well being. Prolongation of pregnancy by drug therapy may reduce the risk of prematurity and improves the chances of delivery.

Reference Lists

Obstetrics By Ten Teachers, 18th edition; Philip N. Baker.

Obstetrics Illustrated, 7th edition; Kevin P. Hanetty, Ian Ramsden, Robin Callander.

Handbook of Labour Practice, 2nd edition; Dr. Yun-Hsuen Lim, Professor Dr Muhammad Abdul Jamil, and Professor Dr. Zaleha Abdullah Mahdy.

A Practical Approach to Obstatric Problems for the Undergraduate, 4th edition; Professor Kulenthran Arumugam.