Update on Hypertensive Disorders of pregnancy

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Update on hypertensive disorders in pregnancy

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Keywords: gestational hypertension; hypertensive emergencies; pre-eclampsia

Dr R.J.Elton
May 2021

Learning objectives

- By reading this article you should be able to:
- Describe the diagnostic criteria for hypertension
- and pre-eclampsia.
- Identify risk factors for developing preeclampsia.
- Apply risk prediction models for pre-eclampsia in
- clinical practice.
- Formulate management plans for women presenting
- with hypertensive emergencies during
- pregnancy.
- Introduction

Key points

- The target blood pressure during pregnancy is
- <135/85 mmHg.
- New risk prediction models for pre-eclampsia can
- help guide decision making.
- Labetalol, hydralazine and immediate-release
- oral nifedipine are suitable treatment options
- for hypertensive emergencies.
- Hypertensive disorders during pregnancy are
- associated with a long-term increased risk of
- cardiovascular diseases so women should be
- offered lifelong follow-up.

Hypertensive Disorders

- Chronic preexisting hypertension
- Gestational hypertension
- Pre-eclampsia

Maternal Impact

- Cardiac
- Renal
- Vascular morbidity
- Fetal Morbidity
- Preterm
- Small 4 Gestational age
- Death

FIGURE 1 *Why Mothers Die*. Reproduced from Why Mothers Die Report, The Sixth Report of the Confidential Enquiries into Maternal Deaths in the UK, published in 2004. With the permission of the Confidential Enquiry into Maternal and Child Health.

TABLE 1 Maternal deaths notified to the Confidential Enquiry.

	1991–93	1994–96 (+linkage)	1997–99 (+ linkage)	2000–02 CEMACH
Direct	129	134	106	106
Indirect	100	134	136	155
TOTAL	**229**	**268**	**242**	**261**

TABLE 2 Direct deaths reported to the Confidential Enquiry.

	1994–96	1997–99	2000–02
Thromboembolism	48	35	30
Hypertensive disease	20	15	14
Haemorrhage	12	7	17
Amniotic fluid embolism	17	8	5
Early pregnancy	15	17	15
Sepsis	14	14	11
Other Direct	7	7	8
Anaesthesia	1	3	6
TOTAL	134	106	106

ABOUT 76,000 PREGNANT WOMEN DIE EACH YEAR FROM PREECLAMPSIA

"Be prepared before lightning strikes"

www.maternitytoday.org

NEW RESEARCH: MAJORITY OF PREECLAMPSIA-RELATED MATERNAL DEATHS DEEMED PREVENTABLE

MAY 05, 2015 | HEALTHCARE PRACTICES

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Research published in the April 2015 issue of Obstetrics & Gynecology shows that 60 percent of preeclampsia-related maternal deaths were deemed preventable. This large study – Pregnancy-Related Mortality in California: Causes, Characteristics, and Improvement Opportunities– analyzed U.S. pregnancy-related mortality administrative reports and medical records for each maternal death to identify the causes and contributing factors, and improve public health and clinical practices.

Over the last 20 years, a previous decline in maternal deaths has reversed and is cause for concern. The 2009 U.S. pregnancy-related mortality rate was 17.8 deaths per 100,000 live births, up from 7.7 per 100,000 in 1997 and above that of other high-resource countries.

One of every eight U.S. births occurs in California, resulting in more than 500,000 annual deliveries with extensive racial and ethnic diversity. With California's large population-based sample, this study provides a unique opportunity to compare major causes of pregnancy-related mortality and identify improvement opportunities.

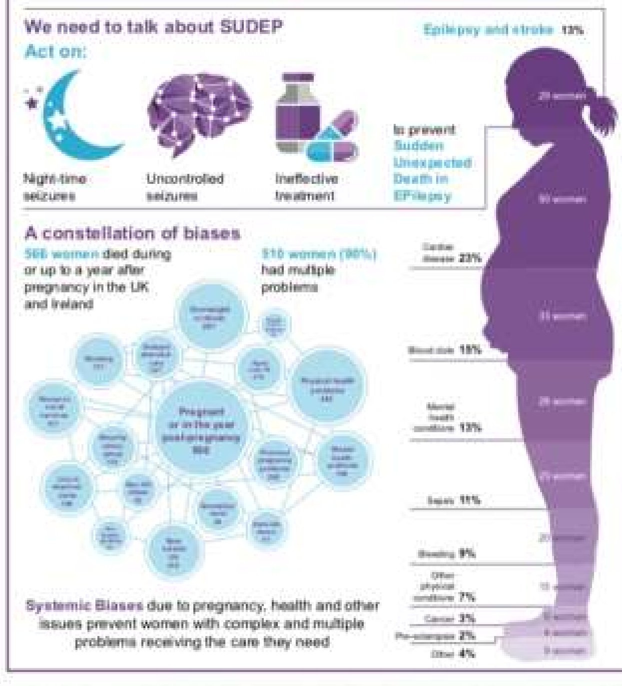
Preeclampsia-related maternal death deemed most preventable

Among the 207 pregnancy-related deaths from 2002 to 2005 studied in California, preeclampsia or eclampsia were identified as one of the five leading causes. The others were cardiovascular disease, hemorrhage, venous thromboembolism, and amniotic fluid embolism.

Of the five leading causes of death, preeclampsia was deemed one of the most preventable – preeclampsia-related deaths had a good-to-strong chance of preventability, estimated at 60%. Healthcare provider factors were the most common type of contributor, especially delayed response to clinical warning signs followed by ineffective care.

Key messages
from the report 2020

In 2016-18, **217 women died** during or up to six weeks after pregnancy, from causes associated with their pregnancy, among 2,235,159 women giving birth in the UK.
9.7 women per 100,000 died during pregnancy or up to six weeks after childbirth or the end of pregnancy.



Preeclampsia definition and diagnosis

- Hypertension after 20 weeks plus one or more:
- **AKI** (creatinine rises by 90 micro mol litre)
- **Liver Involvement** (ALT >70)
- **Neurological complications** (seizures severe headaches visual disturbance clonus blindness, altered mental state and stroke)
- **Utero placental dysfunction** (umbilical artery waveform, fetal growth, stillbirth

American Journal of Obstetrics and Gynecology
Volume 155, Issue 3, September 1986, Pages 501-507

Recommended articles

No articles found.

Citing articles

Maternal-perinatal outcome associated with the syndrome of hemolysis, elevated liver enzymes, and low platelets in severe preeclampsia-eclampsia ☆

Baha M. Sibai M.D., Mark M. Taslimi M.D., Adel El-Nazer M.D., Erol Amon M.D., Bill C. Mabie M.D., George M. Ryan M.D.

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Abstract

During an 8-year period, 112 severe preeclamptic-eclamptic patients with the above syndrome were studied. The incidence of this syndrome was significantly higher in white patients, in patients with delayed diagnosis of preeclampsia and/or delayed delivery, and in multiparous patients. Twenty-six patients had amniocentesis and 16 received opidural anesthetics. There was one maternal bleeding episode associated with epidural anesthetics. The use of steroids in 17 patients did not improve maternal platelet count. The overall perinatal mortality was 367 per 1000 and neonatal morbidity was significant. There were two maternal deaths and two patients with ruptured liver hematoma, and nine had acute renal failure. Thirty-eight percent had intravascular coagulopathy and 20% had abruptio placentae. On follow-up, 44 patients used oral contraceptives without maternal morbidity and 38 patients had 49 subsequent pregnancies. Only one patient had recurrence of the syndrome in subsequent pregnancies. The presence of a “true” syndrome of hemolysis, elevated liver enzymes, and low platelets (HELLP syndrome) in preeclampsia is associated with poor maternal-perinatal outcome.

Risk Factors for developing Preclampsia

- **Strong Risk**
- Previous preeclampsia
- Chronic Hypertension
- BMI>30
- Diabetes Mellitus
- Antiphospholipid Syndrome Systemic Lupus
- Assisted reproduction

- **Moderate risk**
- Primiparity
- Primipaternity – changed paternity and interpregnancy interval more than 5 years
- Advanced maternal age >40
- Family history
- Multiple gestation
- Chronic kidney disese

Risk Prediction tools – the NEW Blood tests

Placenta Growth Factor (PIGF) - vasodilator -

Soluble fms –like tyrosine kinase – Vasoconstrictor, PIGF antagonist.

PREP-S (before 34 weeks)

Full PIERS

NICE recommended

Prevention

- aspirin 150 mg daily from 11 weeks
- reduces risk of preeclampsia

- calcium used , might work if deficient

- folic acid – proven not to prevent preeclampsia
- Healthy lifestyle and diet is always recommended

Management

- Blood pressure New target is 135/85
- (Admit as emergency when PBP160, 110)

- Timing of birth
- hypertensive emergencies
- Eclampsia

Management of hypertensive emergencies –HDU+

- ACOG definition 160/110 for 15 minutes acute onset
- Presentations include : myocardial infarction, pulmonary oedma ,respiratory failure or stroke.
- Investigations-**Blood**FBC/ U+E LFT, Fibrinogen ,urates clotting**,**
- **Urine**, PCR microscopy
- Imaging – organ, as required

Management of hypertensive emergencies –HDU+

- Prevent endorgan damage – control BP
- Prevent convulsions/brain damage – magnesium
- Fluid management – in/out
- Monitor the fetus.
- Monitor the mother

Complications in the Management of hypertensive emergencies – HDU+

- **Pulmonary oedma** –

Beware fluids, hypoxia, uterotonics, oral intake, post partum redistribution.

Oxygen , sit up , Diuretic, morphine GTN. CXR ECHO to investigate other causes e.g CARDIAC

- **Eclampsia** Self limiting . Prevent the second seizure. 20% have coagulopathy.
- Risk of stroke = 10X

Complications in the Management of hypertensive emergencies – HDU+

- **Eclampsia : Symptoms .**Self limiting . Prevent the second seizure. 20% have coagulopathy.
- Risk of stroke = 10X
- Dose is 4g +1 g per hour.
- Magnesium toxicity – prevention / treatmetn

Considerations For Anaesthesia

- **analgesia** : epidural good, clotting tests.
- Remifentanil gives good satisfaction but mediocre analgesia
- **anaesthesia** : regional block – top up epidural for cs. Avoid GA
- **Monitoring** : aim to maintain placental perfusion and avoid MAP above 110 mmHG

Follow up

- PTSD –Post natal depression
- Post partum hypertension can persist for 6- 8 weeks so will need physician input.
- Risk of complications – long term follow up by GP.
- What about the next pregnancy?

Key points

- The target blood pressure during pregnancy is
- <135/85 mmHg.
- New risk prediction models for pre-eclampsia can
- help guide decision making.
- Labetalol, hydralazine and immediate-release
- oral nifedipine are suitable treatment options
- for hypertensive emergencies.
- Hypertensive disorders during pregnancy are
- associated with a long-term increased risk of
- cardiovascular diseases so women should be
- offered lifelong follow-up.

Questions ?

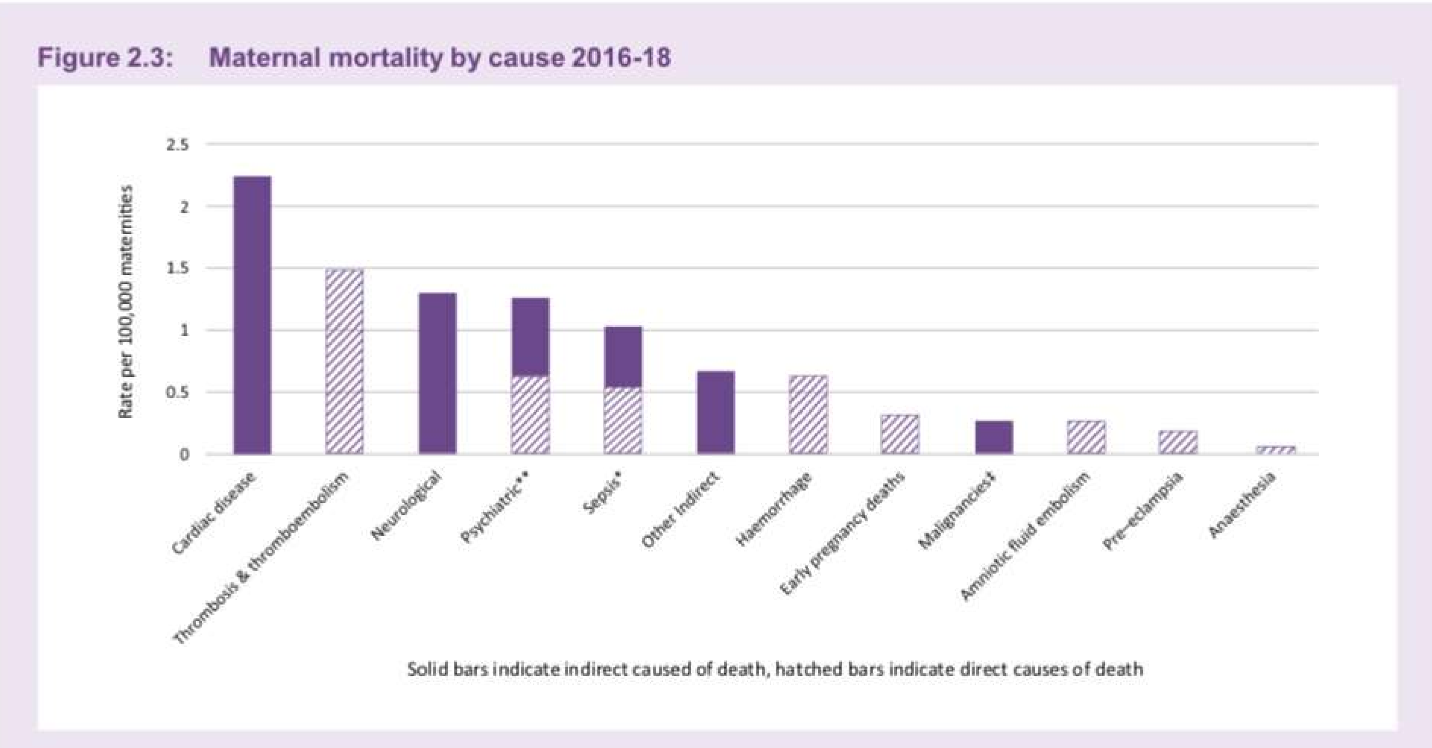

Figure 2.3: Maternal mortality by cause 2016-18

Hatched bars show direct causes of death, solid bars indicate indirect causes of death;

*Rate for direct sepsis (genital tract sepsis and other pregnancy related infections) is shown in hatched and rate for indirect sepsis (influenza, pneumonia, others) in solid bar

**Rate for suicides (direct) is shown in hatched and rate for indirect psychiatric causes (drugs/alcohol) in solid bar

‡Rate for direct malignancies (choriocarcinoma) shown in hatched and rate for indirect malignancies (breast/ovary/cervix) in solid bar

Source: MBRRACE-UK