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IN THE COURT OF COMMON PLEAS
OF CUYAHOGA COUNTY, OHIO
- - - - -
KARL MCELFISH, II, etc.,
Plaintiff,
vs. Case No. CV-04-537289
MERIDIA MEDICAL
GROUP, L.L.C., et al.,
Defendants.
- - - - -
DEPOSITION OF RAYMOND REDLINE, M.D.
MONDAY, MARCH 14, 2005
- - - - -
Deposition of RAYMOND REDLINE, M.D., a Witness herein, called by the Defendants for examination under the statute, taken before me, Cynthia A. Sullivan, a Registered Professional Reporter and Notary Public in and for the State of Ohio, pursuant to notice and stipulations of counsel, at the offices of University Hospitals Institute of Pathology, 2085 Adelbert Road, Cleveland, Ohio, on the day and date set forth above, at 5:30 p.m.
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APPEARANCES:
On behalf of the Plaintiff:
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On behalf of the Defendants Dr. Karasik, Nurse Midwife Beregovskaya, Nurse Midwife Rusga, and Meridia Medical Group via telephone:
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RAYMOND REDLINE, M.D., of lawful age, called for examination, as provided by the Ohio Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposed and said as follows:
EXAMINATION OF RAYMOND REDLINE, M.D.
BY MR. TREU:
Q. Doctor, would you give us your full name, please?
A. Raymond W. Redline.
Q. What is your professional address?
A. University Hospitals of Cleveland.
Q. What is your profession, Doctor?
A. Pediatric pathologist.
Q. Doctor, when were you first contacted regarding this case, the McElfish case?
A. Correct.
Q. When were you first contacted?
A. I'm sorry. Shortly before June 18th of 2002. That's when I received the materials to review.
Q. You would have gotten a phone call prior to that?
A. That's right.

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Q. Do you recall that, or is that just your routine practice?
A. That's my routine practice.
Q. Do you know who you spoke with?
A. I think it was Cathryn Loucas. That's who I had contact with in my early portion of this case.
Q. Do you recall that conversation?
A. No, I don't.
Q. Do you recall the gist of that conversation?
A. She asked me to review the case, and I agreed to.
Q. Did you request certain materials, or were the materials that were provided to you determined by the lawyer who sent you the records?
A. No. I requested materials. I requested all the maternal records, all the neonatal records, and all the pathology slides on the case plus the reports.
Q. There is a letter that you have?
A. Yes.
Q. Can I see that, please? There's a letter here dated June 18th, 2002, from Cathryn

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Loucas enclosing certain materials regarding this case. I'd like to have that marked as an exhibit, if you don't mind.

MR. TREU: Can we mark that as Exhibit A?

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(Thereupon, Defendant's Deposition Exhibit A was marked for purposes of identification.)

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Q. Exhibit A is what?

A. This is a letter from Cathryn Loucas accompanying the materials that I had asked to review in the McElfish case.

Q. To your knowledge did you receive all these materials with this letter?

A. Yes.

Q. Have you received any additional materials other than two deposition or two reports I see that were provided to you at a later date?

A. That's it.

Q. Again, I'm referring to a letter of December 10, 2004, from Mr. Becker in which you were provided copies of reports from

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Dr. Hitchcock and Dr. Gilbert-Barness; correct?

A. Correct.

Q. I'll give that one back. This letter asks that you please give Ms. Loucas a call when you're ready to discuss your findings and to not prepare a report; is that correct?

A. Correct.

Q. Did you do that?

A. I did.

Q. You called her first?

A. I did.

Q. We've taken a look at your file materials here, and you have one batch of documents there which appear to consist of medical records; is that correct?

A. That's right.

Q. Those are the records that were contained in the letter from Ms. Loucas; is that right?

A. Just a small fraction of the records. The others I discarded. These are just some that have some information that I may need to refer to in the future.

Q. I think just for the record I'd like to indicate what I can tell is included in these

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records. The first is a surgical pathology report from Meridia Euclid Hospital for the placenta; is that right?

A. Correct.

Q. Then there appear to be prenatal records on the patient which includes some flow sheet records, prenatal flow; an ultrasound report of June 2nd, 2000; some chemistries and labs from Meridia Euclid; labor and delivery summary; operative note for the delivery; progress notes from the delivery admission; nurse's notes from the delivery admission; some handwritten physician notes from the delivery admission; and that appears to be it. Did I state that accurately?

A. Yes.

Q. Doctor, I see you've also got some notes that you've made?

A. That's right.

Q. Can you describe for me what those notes represent?

A. Those notes are notes that I made when I reviewed the chart. The first portion are from the mother's chart, there are a few from the baby's chart, and then at the bottom

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underneath the horizontal line are my findings in the case.

Q. Can I get a copy of one of those copies? Do you have two of those there?

A. I do

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(Thereupon, Defendant's Deposition Exhibit B was marked for purposes of identification.)

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Q. Exhibit B is your notes; correct?

A. Correct.

Q. All right. Now, what you've indicated is that the top portion of this page of notes is from mom's chart?

A. Correct.

Q. The small middle section is from baby's chart?

A. I didn't mention. Actually, the top part is from mother and baby's chart, the middle section are actually the pathology reports from other institutions, and then the bottom are my findings.

Q. Your findings, fine. Do you know when you did that review?

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A. Yes. It was in June of '02.
Q. Doctor, can you describe your practice for us, please?
A. I'm a pediatric pathologist, and about 70 percent of the time I do clinical work, and the other 30 percent I do a combination of teaching and research.
Q. Your clinical work, what does that consist of?
A. It consists of pediatric pathology including placental pathology and all forms of obstetric pathology and also gynecologic cytology, reading Pap smears.
Q. What percentage of your time do you spend reading adult autopsy slides?
A. Only when I review maternal deaths.
Q. How often? What percentage of your practice is that?
A. That would be mostly medical-legal at this point, although during my fellowship I regularly reviewed maternal deaths, about 10 to 20 during my fellowship, and then probably another 20 or 30 doing the cases, a combination of medical-legal cases and occasional consult cases from other hospitals. But fortunately,

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maternal deaths are not very frequent, so it's not a large percentage of my practice.
Q. Just in terms of just overall adult autopsy slides, is it only in the scope of maternal death cases that you will review adult autopsy slides?
A. Yes, at this point. Although I'm fully trained in adult autopsy, I don't practice it anymore.
Q. Understood. I'm just trying to get a handle on how often you end up looking at these kinds of slides. Can you quantify it for me at all in your practice?
A. Right. About 20 to 30 cases reviewed since 1990.
Q. Prior to this particular case, when was the next last or next prior one you reviewed?
A. I can't really say, but it was within the last two or three years.
Q. Okay. Can you give me an idea of say in the past five years how many have you reviewed?
A. Just a handful of cases, less than five.

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Q. Is the bulk of your practice review of placental slides?
A. Right. I'm sorry. I do all of pediatric pathology and GYN cytology, so the placenta is a portion of that, but only one part.
Q. The report that you drafted in this case that I have is dated August 26th, 2002?
A. Right.
Q. Is that the only report that you drafted in this case?
A. Yes.
Q. Were there any drafts?
A. No drafts.
Q. Is there anything you wish to amend, modify, or delete in that report?
A. No.
Q. Does it accurately and completely set forth your findings in this case?
A. I think it summarizes what I believe to be the main findings. I wouldn't say they are my only findings, but they are the ones that I felt were most important.
Q. When you get a case like this, Doctor, you got the slides and the records at

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the same time, as I recall?
A. (Indicating.)
Q. In what order do you do things?
A. I always review the records first, and I always start with the prenatal records and the maternal OB history, then the labor and delivery, and then the baby's chart. Then I look at the other pathology reports to get some basic factual information, numbers and weights, and then I look at the slides.
Q. Why is that?
A. Because I really can't interpret the pathology without knowing what the problem is. I need to know the clinical context much the same way that the coroner always gets a clinical history and a police report before he actually does the autopsy.
Q. So you were fully aware that this was a death case when you reviewed the slides?
A. Absolutely, yes.
Q. And you had information, clinical information, before you looked at the slides?
A. Yes. Even without the clinical history, I would have known it was a death when I looked at the slides.

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Q. I guess so. You knew it was a lawsuit?
A. I did.
Q. Were you aware when you reviewed the slides that there was a partial placental abruption in the case?
A. Well, yes. I read the history that relates to the abruption. I think it's a relatively small abruption, in my opinion, but yes, I read that.
Q. The slides that you reviewed in this case, do you know how many there were and how many were from each organ? Is that in your notes?
A. Yes. Yes. It's actually in the report -- well, actually I didn't enumerate.
Q. I don't believe it is in the report.
A. Right. I reviewed four slides from the placenta; and yeah, I don't see anywhere here where I've stated the number from the autopsy that were reviewed, but I reviewed the entire set of slides from the autopsy.
Q. But you can't tell us as we sit here today how many you got from the lungs, how many from the heart, how many from the liver, et

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cetera, or the total number?
A. That's correct. Whatever was sampled at the time of the autopsy, correct, which may be in the autopsy report.
Q. Doctor, you used certain terms in your report, and I want to ask you if you can tell us what you mean by these terms. I see the terms diagnostic of, indicative of, and suggestive of. Can I presume that those are carefully selected words on your part?
A. Yes.
Q. When you say diagnostic of, what do you mean by that?
A. Well, diagnostic of generally means -- and I think that I actually don't see in my report where I've used it.
Q. I think I can point it out to you. In the comments section you talk about diagnostic of superimposed severe preeclampsia.
A. Right. When I say diagnostic of I mean there's a histologic finding that even without the clinical history would allow me to make a clinical diagnosis because that finding is only found with that clinical syndrome.
Q. What do you mean by indicative of?

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A. Indicative means a constellation of findings that together overwhelmingly suggest a certain scenario or clinical diagnosis, so greater than a 95 percent chance or something like that.
Q. And suggestive of?
A. Suggestive of means probably what lawyers talk about when they say more likely than not, so 50 percent, greater than a 50 percent probability, but certainly not a definite.
Q. You have the autopsy in the case?
A. I do.
Q. Do you agree with the microscopic description of the organs in that report?
A. There are no findings here I disagree with. I had additional findings as well.
Q. With respect to the heart, Doctor, did you find a 2 centimeter area of interstitial fibrosis on the heart in this case?
A. Well, what I've written down here are the findings that I thought were important to the case. I haven't written down every single diagnosis in the case, and I did not note

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it although -- is it mentioned in the coroner's report? I'm not sure if it is or not. Hold on. Yes, it was noted in the coroner's report, so I didn't disagree with that.
Q. Is a finding of a 2 centimeter area of interstitial fibrosis on the heart consistent with ischemic injury predating the time of delivery?
A. There are other causes of fibrosis. It can be inflammatory or infectious, it can develop chronically due to wear and tear, it could be due to an old infarct, but it definitely is due to some damage to the heart.
Q. You make mention in your report of myocardial hypertrophy. Can you tell me what slides showed this myocardial hypertrophy? Have you identified that?
A. That would be the slides of the heart.
Q. Do you know did you indicate anywhere in your notes what slides of the heart?
A. No. As we discussed before, I didn't identify the specific slides, but I certainly can find them again and photograph them.

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Q. Do you still have the slides?
A. I don't believe so, but it's possible.
Q. Did you have any prepregnancy blood pressures available to you when you did your report?
A. I have some notes on prepregnancy blood pressures, yes.
Q. Where are they?
A. They are on that sheet of notes that I have here.
Q. Can you show me those?
A. Sure. The first one I have is the one at the time of screening and prenatal care which was 130 over 80, and then shortly after in September I have 150 over 90 with a protein of one plus, and then I have on 8-21 at 156 over 102 with two plus protein. Then I have -- the next one I have is admission on 9-16, 195 over 105.
Q. I appreciate all that. My question, however, is did you have any prepregnancy information as to her blood pressures?
A. I'm sorry. I misunderstood you. I thought you meant predelivery. No. The

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screening blood pressure at the time of prenatal care is usually considered to be a prepregnancy blood pressure, but it's not strictly prepregnancy.
Q. Did you find any vascular changes associated with hypertension in your review?
A. No.
Q. You noted a mildly enlarged heart?
A. Correct.
Q. You indicated that you would expect a 250 gram heart?
A. Correct.
Q. I've heard different things about that. That sounds low to me. Why isn't the normal 350 to 375?
A. Well, that's the published data in a book that we use in our institution for normal values for a woman's heart at autopsy.
Q. What is?
A. 250.
Q. 250?
A. Right.
Q. You saw the reports of the other pathologists in this case, and they both indicated 350 to 375. Do you know where that's

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coming from?
A. I think they are adjusting for the woman's body weight.
Q. What is more accurate?
A. Well, adjusting for body weight, when you have obese women, sometimes they have underlying chronic hypertension. When you take an average of all of the blood pressures for obese women, you're going to include some women who have chronic hypertension. So it's controversial if you should use as the normal the normal for a normal body weight or you should include a group of women who have an increased risk for disease associated with hypertension and other problems, but that's where the numbers come from.
Q. In any event, to the extent that there was an enlarged heart you would agree that it was mild?
A. Right. But it wasn't only the weight. It was also the thickness of the left ventricle and the presence of focal myocytic hypertrophy.
Q. You noted that the other pathologists in this case didn't find the

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hypertrophy?
A. Everyone is entitled to their opinion, but the numbers that I have for normal for thickness of the left ventricle are 8 to 12 millimeters, and what I measured on the slide was 1.4 or 14 millimeters, and there's always some shrinkage with formalin fixation. So I think that it's definitely thickened, the left ventricle, and I saw myocyte hypertrophy, and I'll be glad to illustrate it.
Q. Did you take any --
A. No.
Q. -- slides or photos when you did your --
A. No.
Q. Did you find that myocardial thickening throughout the ventricle?
A. No. It's actually that's a measurement for the thickest portion of the left ventricle. It's usually taken at the base of the heart, so if this section wasn't taken at the base of the heart, it may have been even thicker at the base of the heart.
Q. Do you know where it was taken from?
A. No. Somewhere in the middle of the

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left ventricle.
Q. Given that it was 14 and normal is 8 to 12, would you describe it as mildly thickened?
A. Yes.
Q. Can that be from an acute and chronic process?
A. I think that an acute process could contribute to that, yes.
Q. Did you reach a conclusion as to whether it was acute or chronic?
A. Well, first of all, it was my fourth finding, and I thought that the findings were only suggestive of it and not definitive, and I thought it was only mild.
Q. When you put your findings in numerical order, is there some reason for that?
A. Right. Yes. In this particular case, the order of the finding is first I listed what I thought was the most important underlying problem, second was what I thought was the approximate cause of death, third was the contributing cause of death, and fourth was another associated finding. The only significance of chronic hypertension in this

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case is that it increased the risk of getting preeclampsia.
Q. You found renal -- I'm going to butcher this -- glomerular endotheliosis?
A. Yes.
Q. Can we agree that that is indicative of preeclampsia?
A. Yes.
Q. Not necessarily HELLP?
A. No. It has nothing to do with HELLP.
Q. Acute renal tubular necrosis is another one of your findings in the case?
A. Right.
Q. Do I understand correctly that this results from reduced blood flow to the kidney?
A. Correct.
Q. This can result from shock and cardiac arrest regardless of cause?
A. Correct.
Q. It is not diagnostic of HELLP?
A. I don't even think I listed it under HELLP as one of the findings.
Q. So the answer would be it is not diagnostic of HELLP?

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A. No, not at all.
Q. The finding of liver necrosis in the case, are similar findings found in patients who suffer from shock?
A. No. This pattern of periportal necrosis is very typical for HELLP or severe preeclampsia. In patients with shock, they get central lobular necrosis.
Q. Just again just to be clear, is it indicative of preeclampsia but not necessarily HELLP?
A. Well, HELLP means elevated liver enzymes, so it's indicative of that syndrome. All of the elements of the HELLP syndrome were met in this case.
Q. What are those elements?
A. Hemolysis, elevated liver enzymes, low platelets. I say low platelets, that's the one I'm not sure of. Actually, yes, they went down to 79.
Q. What were your findings in the lungs?
A. My findings in the lungs were that there was an acute capillaritis, what we call white cell thrombi, there were platelet fibrin

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thrombi, there was an increase in alveolar macrophages, and there was dilatation of the pulmonary veins. I did not disagree with any of the coroner's findings.
Q. I'm going to ask you to go through those again because I couldn't keep up with you.
A. Acute capillaritis which is just a term meaning aggregates of white cells in the capillaries, platelet fibrin thrombi indicative of disseminated intravascular coagulation, an increase in alveolar macrophages mild.
Q. What is that?
A. That's a change you see with congestive heart failure. And pulmonary venous dilatation.
Q. Take me back to the platelet fibrin thrombi again. What was that?
A. Those were in the capillaries, and those are indicative of DIC.
Q. You say you did not disagree with any of the findings from the autopsy?
A. Correct.
Q. Including the focal acute bronchopneumonia?
A. Correct.

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Q. Pulmonary atelectasis?
A. Correct.
Q. And trophoblastic emboli?
A. Correct.
Q. What are those trophoblastic emboli indicative of, suggestive of, or diagnostic of?
A. Pregnancy, diagnostic of pregnancy.
Q. That's it?
A. Yes.
Q. What are trophoblasts?
A. Trophoblasts are the cells that surround the villi and that are bathed in maternal blood in the placenta.
Q. Syncytiotrophoblasts?
A. Right.
Q. What are those?
A. Those are the cells that line the villi are called syncytiotrophoblasts.
Q. Did you find fetal and placental derived emboli within the venous vasculature of the lung?
A. I found trophoblasts in the capillaries of the lung as you do in all pregnancies.
Q. Did you find squamous cells?

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A. No fetal squamous cells.
Q. No fetal squamous cells?
A. No.
Q. Did you disagree then with Dr. Hitchcock and Dr. Gilbert-Barness?
A. Yes. I disagree with them.
Q. So I take it then you don't agree that there was an amniotic fluid embolus in this case?
A. Right. I think that the clinical information is completely inconsistent with amniotic fluid embolus, and I didn't see any pathologic evidence for it, either.
Q. Okay. Let's just talk about the pathologic findings. What would you look for?
A. The most common findings in cases of amniotic fluid embolus is no finding at all because it's very rare to be able to identify fetal cells in the capillaries. I can count on one hand the number of cases where I've seen them in over 20 cases of pretty well-documented clinically amniotic fluid embolus. But in the cases where you do see something, what you see are you see little aggregates of squamous cells that adhere to one another and are sort of

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embedded in a small globule of sort of mucousy material. Sometimes you see hair as well, but that's really uncommon.
Q. So it's the squamous cells that you look for initially?
A. Correct.
Q. Do you find squamous cells in the lungs in any other conditions other than pulmonary emboli, or I'm sorry, amniotic embolus?
A. None that I can think of offhand.
Q. Are you familiar with amniotic fluid embolus?
A. Very familiar.
Q. Have you ever diagnosed it?
A. I have.
Q. Can you tell me on how many occasions?
A. I was an OB resident, so we had a couple of patients while I was doing my residency, and my second child. After the birth of my second child, my wife had an amniotic embolus which our obstetrician and I diagnosed together.
Q. And she got through it?

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A. She did, yes.
Q. Great. So you had a couple during your residency?
A. Clinical cases.
Q. And then with your second child, how did you diagnose it?
A. In all cases it's the same. Either before, slightly before delivery, or at the time of delivery there's a sudden cardiopulmonary arrest followed shortly thereafter by a massive DIC where blood comes pouring out of every orifice.
Q. What about this case does not fit that picture?
A. The deterioration doesn't occur until hours after the delivery when the amniotic fluid is no longer present.
Q. When did the deterioration occur in this case?
A. Well, the blood pressures begin to go down shortly after the patient is given apresoline at about 2:00 in the morning. They stay down. The patient does relatively well until about 3:30 when she becomes dyspneic, cyanotic, and eventually arrests at 3:48.

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Q. When did she deliver?
A. She delivered at 1:18.
Q. So why does that not fit?
A. Well, as I said before, it has to happen at the time when there's amniotic fluid in the uterus. The last time there was amniotic fluid in this uterus was 1:18. So mothers don't go for two hours or two-and-a-half hours afterwards and then arrest at that point. There's no amniotic fluid to embolize.
It's a sudden process. What happens is the placenta begins to peel off the uterus, and some of the amniotic fluid slips behind the placenta and gets sucked up in those maternal veins. Once the placenta is delivered and there's no amniotic fluid, then you can no longer have an amniotic fluid embolus.
Q. I thought I heard you say it happened hours after delivery.
A. Correct. Two-and-a-half hours was the deterioration. Amniotic fluid embolus only happens --
Q. You misunderstood my question. I'm sorry. I don't mean to interrupt you. I thought I heard you say that the entity usually

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presents hours after delivery.
MR. BECKER: No.
A. No. Before delivery.
Q. Before delivery?
A. But usually right at the time of delivery. When it occurs not at the time of delivery it's always before delivery.
Q. Are there any presenting symptoms before the person crashes, or is it a sudden and acute event?
A. It's a sudden and acute event.
Q. Do these patients first become dyspneic?
A. In my experience, yes.
Q. Did this patient become dyspneic prior to delivery?
A. Prior to delivery?
Q. Yes.
A. I don't have that in my notes. If that's the case, then I didn't know that.
Q. Well, taking out the pathologic findings, just the clinical part of it, is it the timing that doesn't fit in this case?
A. Exactly.
Q. So what you're saying is that it

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should be a sudden acute event very close in time to the delivery before the placenta is removed?
A. It has to be, yes. And then the other thing that doesn't fit is that the hypotension precedes the arrest by hours. The hypotension begins at 2:30, the dyspnea doesn't start until 3:33, and then the arrest doesn't happen until 3:48. That's not generally the way it happens with amniotic fluid embolus. Everything happens at once.
Q. Is hypertension a symptom of amniotic fluid embolism?
A. No.
Q. Would you agree with the statement that the diagnosis of amniotic fluid embolism has traditionally been made at autopsy when squamous cells are found in the maternal vasculature of the lungs?
A. No, I wouldn't. Most cases are clinical diagnosis. As I said before, it's very rare to be able to document the squamous cells in the lungs.
Q. Does this patient's DIC fit with an amniotic fluid embolism?

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A. The DIC could be due to preeclampsia, abruption, amniotic fluid embolus, blood loss, ARDS, pulmonary embolus. There are more possible causes of DIC in this case. To me the main ones are preeclampsia and hypotension.
Q. I want to look at your comment section of your report, if we could, please. Have you got it?
A. I do.
Q. You indicate that the findings, your findings, are suggestive of underlying chronic hypertension?
A. Correct.
Q. Again, from your prior testimony, does that mean you believe that it was greater than 50 percent that this patient had chronic hypertension?
A. Yes.
Q. That's based on what again?
A. The finding of increased heart weight, left ventricular hypertrophy, and myocyte hypertrophy.
Q. None of those are diagnostic of that condition?
A. Correct. And then I would comment

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that a 50 percent chance to me isn't a strong chance. It's just -- it's almost like flipping a coin.
Q. Right. I was going to say, as I say, you described diagnostic as a definite, indicative of as a high percentage, and suggestive of you're telling me is a coin toss?
A. Right. As I said, chronic hypertension isn't really important in any of my conclusions regarding the case either except that it increases the risk of the patient getting preeclampsia in the first place.
Q. So just so we're clear, I need to find this out before we get out of here today, and that is, by saying suggestive of underlying chronic hypertension, would you come into court and testify that it was a probability that this was the case or a possibility?
A. I think I would say a strong possibility. I don't want to come across too strong on that, but I think there are a number of findings.
Q. That's fair. We just need to be on the same page.
A. That's fine.

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Q. There's no question this patient had severe preeclampsia at least late in the pregnancy at the time she presented for the delivery admission?
A. Correct, and had hypertension as early as August 21st. So either chronic hypertension or preeclampsia, take your pick.
Q. There were times she was hypertensive and times she was not?
A. Right. But 156 over 102 isn't subtle hypertension. She was significantly hypertensive a month before her delivery.
Q. At least when that reading was taken?
A. Fair enough. Fair enough.
Q. There were also numerous readings when she was not hypertensive; do you agree with that?
A. Yes.
Q. The congestive heart failure, to what do you attribute that finding if at all?
A. Right. Well, I think that fluid overload may have played some role in it. Second, I think that the effect of whether it was chronic hypertension or exacerbated

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hypertension close to delivery and the body getting used to that degree of hypertension and then the sudden hypotension can throw the heart into dysfunction. It's not getting enough pressure.
Q. When you say the recent hypotension begins at least six hours prior to death, are you referring to the hypotension that occurred shortly after delivery?
A. What I'm referring to are the pathologic findings of acute tubular necrosis and myocardial necrosis, the subendocardial myocyte necrosis, and that corresponds to the time of hypotension that begins approximately an hour and ten minutes after delivery.
Q. Did you know or know of Dr. Hitchcock from Ohio State?
A. No. I don't know him.
Q. How about Dr. Gilbert-Barness?
A. Yes. I know her.
Q. How do you know her?
A. Well, I'm writing a chapter in her textbook is one way, but she's been a member of the Society of Pediatric Pathology for years, and I've heard her present and chatted with her

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at meetings.
Q. Does she have a good reputation in the community?
A. Absolutely. As a pediatric pathologist, she's one of the leaders.
MS. DISILVIO: I'm sorry to interrupt. Can we take a quick two-minute break?
MR. TREU: Sure.
MS. DISILVIO: Thanks.
(Brief recess.)
Q. Doctor, you won't be offering any opinions on the standard of care in this case; will you?
A. No.
Q. Are there any other reasons you can find from your review of the records and the pathology in this case for Mrs. McElfish's mild cardiomegaly and chronic hypertension?
A. No.
Q. Are there other reasons for her ventricular cardiomyocyte hypertrophy other than chronic hypertension?
A. No. Well, I mean, there are other potential reasons, sure.

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Q. What are those?
A. If she had a myocarditis or something, her heart may have had to work harder and had some hypertrophy of the nuclei. I didn't see any evidence of myocarditis at the autopsy, but there were other potential explanations that just weren't found at autopsy.
Q. Are you going to offer an opinion to a degree of probability as to the time frame of Mrs. McElfish's hypertension?
A. We haven't gotten into that. The only basis I would have for that pathologically is just looking at the placenta which we didn't discuss. It has changes consistent with uteroplacental underperfusion, and I think that's at least a week, a week or more prior to the delivery to get that kind of pathology.
Q. Let's talk a little bit about the placenta now that you bring it up. I'm flipping papers since I don't have a table or desk to work with here. That was a dig.
You found a relatively large, mature placenta, 640 grams?
A. Correct.
Q. Is that of any significance to your

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findings in this case?
A. No, not really. Placentas that are large are actually a risk factor for preeclampsia, number one. Women who are overweight are more likely to have large placentas. Women who have a metabolic syndrome, quote, chronic hypertension, gestational diabetes, hypolipidemia, are more likely to have large placentas. Those are some of the risk factors. There are others, too.
Q. Does it have any bearing on the incidence of placental abruption, the size of the placenta?
A. Not to my knowledge. I've never seen an association.
Q. Your second finding on the placenta is, change is consistent with mild uteroplacental underperfusion, and what is after that, the findings that are consistent?
A. Correct, three findings.
Q. That includes the villous infarct, locally increased syncytial knots?
A. Yes.
Q. Increased perivillous fibrin with X-cells. What are the causes of uteroplacental

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underperfusion?
A. Preeclampsia, chronic hypertension, diabetes, connective tissue disease.
Q. Can it be a result of an old placenta, a placenta that has been there too long?
A. No.
Q. The remote villous infarct, is that consistent with any other findings?
A. No.
Q. What are syncytial knots?
A. Well, the nuclei are surrounded by syncytiotrophoblasts, and they usually grow and are shed, and they end up in the lungs. When you decrease the oxygen tension in the intervillous space, then the cells begin to die more quickly. So they ball up into these little knots, and then they pass into the circulation, and more trophoblasts grow to replace them. So an increase in syncytial knots means there is an increase in turnover of trophoblasts due to hypoxia which is due to the decreased perfusion by the mother.
Q. Is there any significance to the fact that these were focally increased as

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opposed to globally increased?
A. Right. In a preterm placenta, it's very easy to see an increase in syncytial knots because they are not there normally. In a term placenta there are always some syncytial knots. So what we're looking for is some areas of the placenta that have more than others. So when I say focally increased syncytial knots, I mean there are areas of the placenta that are underperfused relative to other areas, so one part of the placenta is serving as a control for other areas of the placenta.
Q. Why do you get this focal increase?
A. Blood gets into the placenta through 80 spiral arteries. Some of them are working okay, and some of them aren't, and there's always variation in how much blood is getting in. In a normal pregnancy, you would expect that most of them are functioning well. In a placenta with maternal underperfusion, a good percentage of them aren't functioning well, and the ones that can't help each other, where there's no sharing of the blood, the villi are going to have more syncytial knots than those where there's a relatively better blood supply.

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Q. Can you educate me on perivillous fibrin with X-cells?
A. Perivillous fibrin is very simple. It just means that the blood is sitting around in the intervillous space because not that much is coming in to push the stuff out that's already there. So you have good maternal perfusion, blood is coming in and quickly, and there's no time for it to clot. When it's not coming in well, then it sits around and clots. Then the trophoblasts begin to migrate out into the fibrin after a while. That's indicative of the time that the fibrin has been there, so at least a week.
Q. Are you going to offer an opinion in this case regarding the time frame of this patient's severe preeclampsia?
A. No.
Q. I may have touched on this previously, but the extracellular fluid accumulation that was found, is that most likely due to the administration of fluids in the postpartum period?
A. I believe so, yes.
Q. Did the autopsy indicate any

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evidence of myocardial hypertrophy?
A. That's the only basis that I have for concluding there was myocardial hypertrophy.
Q. I'm talking about the autopsy report. I apologize.
A. Yes. The weight of the heart, the 370 grams.
Q. Did they indicate anything in the microscopic findings, however?
A. I don't believe so.
Q. Other than the weight, did they find any other abnormalities of the heart in the autopsy report?
A. They did. They saw the subendocardial myocyte necrosis. I realize that I'm only one of four people who believes in this myocyte hypertrophy, but I'm sticking with my opinion.
Q. You're outvoted in this case.
A. That's fine. It's not important to my conclusions anyway, and I don't care.
MR. TREU: If any of you other guys have questions, I'm just looking through here right now. I may be done.
EXAMINATION OF RAYMOND REDLINE, M.D.

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BY MS. REID:
Q. Dr. Redline, I'm Chris Reid, and I represent Euclid Hospital, and I do have just a few questions. First of all, regarding your expert history as an expert witness, have you served as an expert in other cases involving a maternal death due to preeclampsia?
A. Yes.
Q. About how many times?
A. I can't say exactly, but I would say five to ten times, maybe more toward the five, but it's one of the more common scenarios in maternal deaths.
Q. Have you provided deposition testimony in those cases?
A. Well, yes.
Q. Do you have any recollection of in those five to ten cases whether they were on behalf of the plaintiff or on behalf of the defendant?
A. I can only really recall one that involved preeclampsia that involved maternal death, and that was one with Mr. Becker many, many years ago. I can't remember the name of the patient now.

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Q. You don't remember the name?
A. No.
Q. Do you remember the names of any of the other attorneys who you worked with in any of those five to ten cases?
A. No. I'm afraid I don't.
Q. Have you ever served as an expert in a case involving an amniotic fluid embolus?
A. Yes.
Q. Have you ever given an opinion that a patient did indeed die of an amniotic fluid embolus?
A. Yes.
Q. Was that a case where you provided deposition testimony; do you recall?
A. I can't say for sure. I think so, but I don't know for sure.
Q. On about how many occasions have you been involved in a case involving an amniotic fluid embolus?
A. It's less than the preeclampsia cases. It's probably two to four, three, something like that, the number of cases. To the best of my knowledge in all of the other cases I thought there was an amniotic fluid

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embolus.
Q. There was?
A. Yes, I believe so. There may have been one other case that I didn't -- no, that was a case here in the hospital where there was a question, one of our cases in the clinical service thought to be an amniotic fluid embolus, I disagreed, and we later showed it was due to sepsis.
Q. But in those two to four cases where you testified as an expert, you found indeed there was evidence of amniotic fluid embolus; correct?
A. Right. Not always by the pathology, but sometimes based on the clinical history plus the pathology, meaning that there weren't squamous cells, but the rest of the pathology and the timing was consistent with it so that I thought that was the most likely cause of death in that case.
Q. What other pathologic evidence did you find in those cases that was consistent with amniotic fluid embolus?
A. Just the DIC really.
Q. So in those cases, and I'm just

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trying to summarize here, it would have been the clinical picture plus pathologic evidence of DIC that supported a conclusion of amniotic fluid embolus?
A. Right, although there may have been a case where I actually saw squamous cells. I just don't remember. It's been over about a 15-year period.
Q. You'll agree that a finding of fetal squamous cells in the pulmonary vasculature is consistent with amniotic fluid embolus; correct?
A. I would.
Q. That is indeed one of the ways to make the diagnosis on autopsy or postmortem?
A. Correct. But it's very difficult to make that determination because there are a lot of things that mimic squamous cells on autopsy, so it's hard to be sure of.
Q. Have you had a chance to look at the slides in this case after receiving the expert reports of Dr. Hitchcock and Dr. Gilbert-Barness?
A. No. I didn't need to because I was reviewing this case with an eye toward the possible cause of the maternal death. Although

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the timing wasn't right for amniotic fluid embolus, I made the statement at the bottom of the sheet before reading any other reports that this was not massive abruption, not amniotic fluid embolus, not exsanguination, not ARDS, and not pulmonary embolus. So I had that in mind when I reviewed the case the first time.
Q. Did you evaluate the slides in this case looking for anything that might mimic fetal squamous cells in the vasculature?
A. Sure.
Q. Was there anything?
A. Absolutely. There's a very common problem which is that especially in coroner's cases where the body has sat around for a while and at the time of autopsy the sections sit around for a while before they get fixed, there's almost always the lining of the blood vessels separates and sits in the middle of the blood vessels, so you often see these clumps of cells that can mimic squamous cells. If you don't see the globules of the fatty material and you don't see the squamous cells actually in a particular configuration where they are almost molding with one another, I don't think you can

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make a diagnosis. In fact, seeing too many squamous cells is actually a bad thing.
Q. Why is that?
A. In the cases where there's amniotic fluid embolus, you usually see only a very few squamous cells, and the rest of the capillaries are clean. When every capillary has cells sitting around in the middle of it, it's difficult to tell the real ones from what is just degeneration artifact. Even though you would think a lot of squamous cells end up in the lungs, in fact there are usually none in most cases which is well documented. In the few cases where you do see them, they are usually quite rare and hard to find.
Q. So if there's more than a very few, that would constitute artifact which is the lining of blood vessels which separate?
A. It doesn't rule out an amniotic fluid embolus. It's theoretically possible, but there just aren't that many fetal cells in the amniotic fluid. You only get a small amount of amniotic fluid that leaks into the blood before it sort of closes down. So it's really hard to believe that you would get hundreds and hundreds

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of squamous cells released into the circulation. That would probably take hundreds of ml's of amniotic fluid to get that.
Q. What quantity would you typically expect?
A. Very small. It's hard to tell, but the mechanisms of the placenta separating are obviously evolutionarily conservative so that the amniotic fluid does not get into maternal vessels normally since it causes so many problems. The problem is that amniotic fluid has a high concentration of phospholipids, and as soon as any phospholipids hit the circulation, it triggers coagulation.
In the clinical laboratories we have put microgram amounts of phospholipids into a reaction to trigger clotting. So as soon as a very small amount of amniotic fluid hits the blood, it begins to coagulate. So that's why you really wouldn't expect there to be a whole shower of cells into the lungs.
Q. Do you keep any type of list of all the cases you reviewed over the years in a medical-legal setting?
A. No. The only thing I have is a list

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of all my depositions and trial testimonies over the last four years.
Q. Is that something that's easily obtainable?
A. Yes.
Q. Could you make a copy of that list and get it to Mr. Becker?
A. Sure.
Q. I'm sure he will send it along.
MR. BECKER: Sure.
Q. What is your definition of preeclampsia?
A. I use the definitions that are endorsed by ACOG.
Q. Which is?
A. Well, I don't remember the exact details and the changes offhand, but for mild preeclampsia it's generally something like a blood pressure of 140 over 90 on two occasions something like six hours apart or two hours apart in association with at least 500 milligrams of protein in the urine.
Q. So you would stand behind the definition that ACOG provides for preeclampsia?
A. Right. But the pathologic diagnosis

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of preeclampsia is different than the clinical diagnosis of preeclampsia. So when I see endotheliosis and perichordal necrosis in the liver, that's pretty strong evidence for being preeclampsia regardless of the clinical details, and certainly with the clinical details in this case, I feel pretty comfortable.
Q. As it relates to the timing, though, of the preeclampsia or the severity of it, there's no pathologic way to determine that with any certainty?
A. I have no opinions about the timing of the preeclampsia in this case and the extent of it except that there was a HELLP syndrome.
Q. Have you authored any articles -- I apologize, I didn't look through your CV in much detail -- related to preeclampsia or amniotic fluid embolus?
A. Nothing on amniotic fluid embolus, but preeclampsia, there are some articles that -- there's one article that primarily relates to preeclampsia. Many of my book chapters and other articles cover preeclampsia as part of them.
Q. They would all be listed in your CV?

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A. They are all listed, yes.
Q. Let's talk about this concept of trophoblastic emboli.
A. Right.
Q. You said they are diagnostic of pregnancy?
A. Right.
Q. And that's really their only diagnostic significance?
A. Usually you know the patient is pregnant anyway, so they are not too useful, but they are always present in a pregnant female that dies.
Q. Do they provide any information whatsoever related to an amniotic fluid embolus in your opinion?
A. They come from a different place. They come from the intervillous space where the maternal blood circulates, and the amniotic fluid is coming from the amniotic cavity and then it's going behind the placenta. So the knots are coming from a different location where there is no amniotic fluid.
Q. Is there a typical quantity of trophoblastic emboli that you typically see?

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A. Thank goodness it's uncommon to see lungs from dead mothers, and sometimes there's a lot and sometimes not that many. I don't think anybody has done a study, at least not to my knowledge, but I didn't think them to be unusual in this case.
Q. Any statement that the evidence of trophoblasts in the lungs is indicative of amniotic fluid embolus you would disagree with?
A. Right.
MS. REID: I think that's all the questions I have, Dr. Redline. Thank you.
MS. MITCHELL: Doctor, we met earlier. My name is Ann Mitchell. I actually don't have any questions for you tonight.
MR. TREU: Marilena?
EXAMINATION OF RAYMOND REDLINE, M.D.
BY MS. DISILVIO:
Q. Doctor, I think you may have said this but I just want to make it abundantly clear. You have completely ruled out amniotic fluid embolism for this patient?
A. Right. I don't see any pathologic evidence, and I don't think the clinical picture fits.

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Q. But to the extent that any other experts may have that opinion, you would disagree?
A. Correct.
MS. DISILVIO: Thank you. I don't have any other questions.
FURTHER EXAMINATION OF RAYMOND REDLINE, M.D.
BY MR. TREU:
Q. Doctor, I want to go through your notes.
A. Yes. There were two copies originally. You sure you don't have my copy?
Q. I just have that one that we have marked.
A. I've got it.
Q. What I want to look at is starting below the first line, the small section there in the middle. What does this represent?
A. That represents data that comes from the pathology reports from the Euclid Hospital for the placenta and from the coroner's office for the autopsy.
Q. Would you mind running through that for me and interpreting what you have written here?

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A. Sure. For the placenta, it weighed 640 grams, and it had a 25 centimeter marginally inserted umbilical cord, it had a 1.5 centimeter infarct, and the fetal placental weight ratio was 5.21 which was slightly elevated.
Q. That is from some source?
A. Yes. It's from dividing the weight of the fetus by --
Q. No.
A. You mean the fact that it's slightly elevated?
Q. Go ahead.
A. From the autopsy I note that the weight of the mother was 286 pounds, that she was 51 inches tall, which I hadn't noticed before, and actually, that sort of goes along with a smaller heart. It doesn't always go along with weight. Height is important as well.
Anyway, pleural fluid 500 cc's in each cavity, amber colored. Ascites, 300 cc's, bloody. Pericardial fluid 80 cc's, and I think it says amber. The heart weighed 370 with a normal of 250. The spleen weighed 350 with a normal of 155. The kidneys 390 with a normal of 240 to 350. Cervix and uterus together 770

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grams, thick, diffuse hemorrhage and fibrin in the endometrium, not unusual findings.
The lungs weighed 900 with a normal from 680 to 1050. The liver weighed 2580 with a normal from 1500 to 1800, and the brain, 1275 with a normal of 1275. The brain is really the only organ which wouldn't be affected by diffuse edema, so I took that as sort of being my gold standard of what a normal organ weight in this case might be. Finally, the liver, I noted that it was extensively dark red with I think it says necrosis and hemorrhage.
Q. Then the next set of notes starts, it says my review, is that what that says?
A. Correct.
Q. Can you take us through this, please?
A. Under the placenta, a remote infarct 1.4 centimeters in diameter in block number two. Increased knots and increased intervillous fibrin with X-cells and noted most in block number four. There were a total of four recut slides. I did not get the blocks on one and three, although I looked at the slides on them.
For the autopsy, the heart, I noted

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that there was myocyte hypertrophy and the left ventricle measured 1.4 centimeters, and then there's an arrow off that says focal subendocardial and papillary muscle myocyte necrosis, parenthesis, hypereosinophilia. Then liver showed periportal necrosis and large drop of steatosis which is nonspecific.

The uterus was not taken from the implantation site of the placenta, so you wouldn't expect to see atherosis which is something you would see with preeclampsia. I did not see atherosis. There was myocyte necrosis in the uterus and some focal residual hemorrhage. The lung findings we have gone through already. Do you want me to repeat those?

Q. Yes.

A. Acute capillaritis with white cell thrombi, platelet fibrin thrombi, alveolar macrophages, mild pulmonary venous dilatation.

Q. There is something scratched out there. Do you know what that is?

A. Yes. I can't tell what that is, and it's nothing secret. It was just -- there are other scratches here, too. It's just as I was

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writing I changed my mind. It was all done at the time of the original notes.

Central nervous system within normal limits. Thymus within normal limits. Kidney showed acute tubular necrosis, endotheliosis. There were no platelet fibrin thrombi in the kidneys. There were casts along with the acute tubular necrosis.

The other organs were -- I say not sampled, but I think that I was going to make a list of organs that weren't sampled and didn't, because I think there were sections of the spleen, adrenal, thyroid, pancreas, GI, and bladder, but I can't be sure of that. At any rate, there were no findings for that.

Q. Before we go on, I just want to ask you, there are little stars by some of these findings?

A. Right.

Q. For example, up under the liver?

A. Right.

Q. The necrosis?

A. Right.

Q. Why is that?

A. Well, I think the star findings are

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the ones that I found to be particularly significant.

Q. Why is endotheliosis starred?

A. Because it's considered to be diagnostic of preeclampsia.

Q. What about casts?

A. Casts are a good indication of acute tubular necrosis.

Q. All right. Go down to the -- should we go to the conclusions next?

A. Sure. Conclusions, I said late onset fulminant preeclampsia with endotheliosis, hepatic necrosis, and disseminated intravascular coagulation. Significant hypotension 6 to 24 hours prior to delivery. Acute tubular necrosis --

Q. Delivery or death?

A. Prior to death, yes. I'm sorry. Acute tubular necrosis and subendocardial myocyte necrosis, myocyte hypertrophy, pulmonary edema and effusions consistent with congestive heart failure. And then, as I said before, not massive abruption, amniotic fluid embolus, exsanguination, ARDS, or pulmonary embolus. I have some timings on the right-hand side.

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Hypertension and vasospasm less than one hour post delivery. Sudden hypotension one hour post delivery. Shortness of breath, pulmonary edema, and congestive heart failure two hours post delivery. Cardiopulmonary arrest two-and-a-half hours post delivery followed by DIC and vaginal bleeding.

Q. When you say late onset fulminant preeclampsia, I think you testified earlier other than to say it was late onset you don't have an opinion to a degree of probability as to the timing of that preeclampsia?

A. The late onset is referring to the fulminant nature of the preeclampsia. I'm not saying there wasn't preeclampsia before, but I'm saying that the fulminant preeclampsia was late onset.

Q. Just so we're all clear, what do you mean when you say fulminant?

A. Well, to me fulminant means when you have elevated liver enzymes and low platelets, when you get the development of the HELLP syndrome, when you have blood pressures where the diastolic is over 100 and when the systolic is over 170, those kinds of things.

Q. To the best of your knowledge have we discussed the opinions that you anticipate offering in this matter?
A. Yes, we have.
Q. If at any time, Doctor, you review any additional materials or if you make any slides or photos, digital photos or anything that you would use to present your testimony at trial, we'd like to know that so we have the opportunity to review those prior to the trial; is that okay?
A. That's fine.
MR. TREU: With that I think I'm done. Does anybody else have any other questions?
MS. REID: Nothing further.
MR. TREU: Do you want to read it, Doctor?
THE WITNESS: No. I waive reading.
- - - - -
(Deposition concluded at 6:42 p.m.)
(Signature waived.)
- - - - -

CERTIFICATE

State of Ohio,)
) SS:
County of Cuyahoga.)

I, Cynthia A. Sullivan, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within named RAYMOND REDLINE, M.D. was by me first duly sworn to testify to the truth, the whole truth and nothing but the truth in the cause aforesaid; that the testimony as above set forth was by me reduced to stenotypy, afterwards transcribed, and that the foregoing is a true and correct transcription of the testimony.

I do further certify that this deposition was taken at the time and place specified and was completed without adjournment; that I am not a relative or attorney for either party or otherwise interested in the event of this action. I am not, nor is the court reporting firm with which I am affiliated, under a contract as defined in Civil Rule 28(D).

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Cleveland, Ohio, on this 21st day of March 2005.

Cynthia A. Sullivan

Cynthia A. Sullivan, Notary Public
Within and for the State of Ohio
My commission expires October 6, 2006.

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DEPOSITION OF RAYMOND REDLINE, M.D.