IN THE COMMON PLEAS COURT

SUMMIT COUNTY, **OHIO**

JUDITH BERARDUCCI, et al., Plaintiffs, VS. C. OLAES, M.D., et al., Defendants.	CIVIL ACTION NUMBER CV-89-01-0207

The testimony of ELIAS GEORGE CHALHUB, M.D., taken at his office located at 1720 Springhill Avenue, Suite 422, Mobile, Alabama, on the 9th day of July, 1990, commencing at approximately 1:35 o'clock, p.m.

A P P E A R A N C E S

FOR THE PLAINTIFFS:	**SPANGENBERG, SHIBLEY, TRACI & LANCIONE** **ATTORNEYS AT LAW** **1500 NATIONAL CITY BANK BUILDING** **CLEVELAND, OHIO** 44114 **BY: WILLIAM HAWAL, ESQ.**
FOR THE DEFENDANT - MEDINA COMMUNITY HOSPITAL:	**AMERMAN, BURT & JONES CO., L.P.A.** **ATTORNEYS AT LAW** 624 **MARKET AVENUE, NORTH** **CANTON, OHIO** 44702 **BY:** JOHN **P. VAN ABEL, ESQ.**

LISA ELMORE PETERS
COURT REPORTER

I N D E X

(NOTE: Plaintiff's Exhibit 1 **was** retained **by** Mr. Hawal. Copies of the Exhibit are not attached to this transcript.)

S T I P U L A T I O N

It is stipulated by and between the parties hereto and their respective attorneys at law that the deposition on oral examination of the witness, ELIAS GEORGE **CHALHUB**, M.D., may be taken before Lisa Elmore Peters, Commissioner, Notary Public for the State at Large, and that the said deposition shall be taken in accordance with the provisions of the applicable sections of the Ohio Rules of Civil Procedure.

It is further stipulated that all notices provided for by said applicable sections of the Ohio Rules of Civil Procedure are waived, as is the signing and certification of said Lisa Elmore Peters and all other requirements and technicalities of every sort regarding the taking and filing of the deposition, except as hereinafter set out:

All objections save as to the form of questions asked are reserved until the time of trial in accordance with the applicable provisions of the said Ohio Rules of Civil Procedure.

Further, it is stipulated that the original of this transcript will be delivered to William Hawal, Esq., as custodian.

It is further stipulated and agreed that the witness hereto reserves the right to read and sign said deposition as provided for by said Ohio Rules of Civil Procedure.

* * * * * * * * * * * * * * * * * *

I, Lisa Elmore Peters, Commissioner and Court Reporter, certify that on this date, as provided by the Ohio Rules of Civil Procedure and the foregoing stipulation of counsel, there came before me at his office located at 1720 Springhill Avenue, Suite 422, Mobile, Alabama, on the 9th day of July, 1990, commencing at 1:35 o'clock, p.m., ELIAS GEORGE CHALHUB, M.D., witness in the above cause, for oral examination, whereupon the following proceedings were had:

(Plaintiff's Exhibit 1 was received and marked for identification.)

ELIAS GEORGE CHALHUB, M.D.

The witness, after having first been duly sworn to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

EXAMINATION

BY MR. HAWAL:

Q Doctor, will you tell us your full name for the record, please?

A Elias George Chalhub.

Q Doctor, I'm handing you what has been marked Plaintiff's Exhibit 1, which is a facsimile copy of the CV that was provided to me last week. Can you take a look at that and tell me whether or not that is a current, up-to-date copy of your curriculum vitae?

A Yes, I think it is current.

Q Thank you.

Do you have any recollection or any records which would indicate when you were first contacted in this case?

A I believe in 1988 I was first contacted, but then

to my memory, the case was closed or something happened and, you know, I discarded all of the records that I had because apparently I was told it was not going to continue. Then I was recontacted sometime after that and I can't tell you exactly when.

Q When you were first contacted, were you provided with any materials such as medical records concerning this infant or the pregnancy of the mother or --

A Yes, I was provided the maternal and the child's records, but to be honest with you, I can't go back that far and tell you exactly what I had.

Q Okay. Do you recall whether or not you had any discussions whereby you had reached an opinion concerning the causation of this child's brain damage at that time?

A I really don't know.

Q All right. How was it that you were contacted? In other words, how was it that Mr. Van Abel or someone first contacted you to be an expert in this case? Do you recall?

A I don't know. I'm sure if you asked them, they would be glad to tell you, but I don't know.

Q You have a number of materials in front of you. Would it be fair to say that that comprises your file on

this case?

A Correct, except the x-rays and I don't have those with me today.

Q What x-rays are you talking about?

A The CT scans.

Q You have had those or have reviewed them?

A Yes.

Q In terms of the materials that you have here with you today, can you give us a summary of what those materials are?

A Sure, I had the feeling you would ask.

Q All right. You wrote --

A I wrote them down. Do you want me to just read them off for you?

Q Please.

A The CT scans that are included in his Akron Childrens Hospital records, the subsequents one, Medina Community Hospital records of the baby and the mother, Childrens Hospital Medical Center of Akron, Akron Neonatology follow-up letters, the Kent, I guess Developmental - I can't even read my own writing - records, Cleveland Foundation Clinic records which includes Dr. Cruse -- K-R-U-S-E?

Q C-R-U-S-E.
A Okay. The Hattie-Larlham Foundation records, expert reports of a Dr. Roessmann, Dr. Korotkin, K-O-R-O-T-K-I-N, and Dr. Barden. Then depositions of Deborah Kappy, Lucile Zitko.
Q Zitko.
A Zitko, Z-I-T-K-O. Carol Roberts, Jane Brock, Jean Herman, Dr. Olaes, and that's O-L-A-E-S, and Judith Berarducci.
Q Any additional expert reports that you've reviewed?
A That's the only ones.
Q You have not seen the reports of Dr. Woods or Dr. Gyves or Dr. Tang?
A No.
Q Have you reviewed any pathology slides?
A No.
Q Have you reviewed any pathology reports pertaining to the pathology slides of this placenta?
A Just the ones in the chart.
Q In terms of the CAT scan films that you reviewed, were those the CAT scan films that were taken at Akron Childrens Medical Center or did you also review subsequent

films that were taken at the Cleveland Clinic?

A I think there was one at the Cleveland Clinic, but certainly the ones that were taken at Akron.

Q Were those copies of original films, to your knowledge?

A Yes, not the original. Those were copies.

MR. VAN ABEL: Excuse me. Off the record.

(Off the record discussion)

BY MR. HAWAL:

Q Doctor, in terms of your review of the CAT scan films, are you qualified to read and interpret the CAT scan results?

A I believe so.

Q All right. Are you qualified to be an expert as a neuroradiofogist?

A Well, I'm not a neuroradiologist but as a physician who specializes in neurology, in child neurology, we read our own scans. If there's any problem, then we would consult with a radiologist or neuroradiologist, but, you know, I think the physician that's treating the child is certainly in the best position to interpret his films.

Q So it is fair to say that that is a common practice in the field of pediatric neurology?

A Correct.

(INTERRUPTION)

THE WITNESS: Can we stop one second and let me get this?

MR. HAWAL: Sure.

(Short break)

BY MR. HAWAL:

Q Doctor, what percent of your practice is limited to adult neurology as opposed to child or adolescent neurology?

A None of adult neurology.

Q All right. You're --

A Well, I take that back. Probably five percent. I have retained some of my previous adult patients, but my practice now is devoted to children and adolescents up to the age of twenty-one.

Q What percent of your practice is devoted to the clinical care of neonates?

A It's hard to give you --

Q Within the first twenty-eight days of life?

A I don't -- you know, I don't know how to give you a percentage. I mean, as a child neurologist, you see -- I see a lot of babies in the nursery, as well as a lot of

babies in follow-up. Twenty percent, thirty percent, but that's just a guess.

Q Okay. Do you, as a pediatric neurologist, ever have the occasion to attend to a delivery as an attending pediatrician or as an attending pediatric neurologist at the request of an obstetrician?

A No, I don't think that's really done anywhere that I'm aware of unless it would be a very unusual circumstance of a degenerative disease or a congential neuromuscular disease, if somebody wanted you to see if there was any present, but that's not a regular occurrence.

Q How would you, Doctor, characterize or if you would have a diagnostic label for Justin Berarducci's present condition?

Is there a diagnostic label from a pediatric neurology standpoint that could be placed upon --

A You mean as a diagnosis?

Q Right.

A Yes, I would classify Justin Berarducci as having a static encephalopathy secondary to an intrauterine chronic infection which has resulted in global neurological involvement as I outlined in my letter of severe intellectual and motor delay, microcephaly, seizure

disorder, spastic quadriparesis, decreased visual acuity, lack of speech, bowel and bladder incontinence, and non-ambulatory state.

Q Do you have an opinion as to whether or not, based upon a reasonable degree of medical probability, Justin Berarducci ever suffered from hypoxic ischemic encephalopathy giving rise to his current neurological deficits?

A Well, you know, it is certainly possible as a pathogenetic mechanism as a result of an infection, because infections not only have cellular damage on a direct basis, but will affect placental-placental blood flow, and one may sustain chronic hypoxic ischemic insults, and which I think probably did occur in this case.

Q Do you have an opinion, based upon a reasonable degree of medical probability, as to the timing of Justin's hypoxic ischemic insult in utero, or a timing parameter, if you will, if you can't come up with a specific time frame?

MR. VAN ABEL: I'm going to object because I'm not sure that his answer implied that it was positively a hypoxic incident that occurred.

BY MR. HAWAL:

Q Well, I understand that, but my question was

whether it was probable and I believe the Doctor's answer was that it was.

And my question is: Assuming that that answer is correct, when was that insult sustained by this child in utero?

A Well, I think the key is whether it is -- in terms of that particular aspect, whether there was one or multiple insults, and in all probability there were multiple insults.

You have to understand this is taken on the background of a child who is microcephalic and has evidence of chronic infection and involvement. And the child certainly had some episode which occurred forty-eight, seventy-two hours, five days prior to delivery which contributed to this child's difficulty, but whether there were other episodes, a week, two weeks, four weeks prior to that which further contributed on that pathogenetic mechanism, there is really no way to tell.

Q Is it fair to say, if I understand your answer correctly, that you do not have an opinion based upon a reasonable degree of medical probability as to whether or not it was most probably a singular episode, or a chronic, multiple episode of hypoxia, if you will, which caused his

present neurological deficit?

A No, that's not fair to say.

Q What is your opinion as to whether or not it is most likely a singular event or a chronic, multiple event or multiple --

A Well, I've already told you that there is little question that he has chronic involvement and by a number of criteria and chronically infected would be, I think, the most likely etiology. He had an episode, which I told you occurred at a time frame of forty-eight hours to five days, and whether there were additional episodes like that, there's no way for me to tell you.

Q Assuming for a moment that there were some episodes in the time frame between five days prior to birth up to forty-eight hours prior to birth, would that -- would those episodes be occurring and causing cumulative damage or would the first insult cause the entire amount of damage that this child currently exhibits?

A I don't think I can answer that. I don't know.

Q Is it well recognized in pediatric neurology that hypoxic ischemic insults cause cumulative brain damage?

A They certainly can, but they do not have to. That's why it's difficult to tell you that. And also it

depends on whether it is hypoxic or whether it is ischemic.

Q Right. Do you have an opinion as to whether or not it is most probably hypoxic or ischemic or a combination of both in this case?

A Well, I think it is hypoxic and ischemic in this case because I think predominantly there is an ischemic insult. And so by the definition of ischemia, you're going to be hypoxic, but we have situations in which an individual will be hypoxic without ischemia.

Q How do you define the intrapartum period?

A It's the delivery process.

Q Does your definition of intrapartum also include the labor process?

A Yes, I'm sorry. The labor and delivery.

Q Do you have an opinion as to whether or not this infant suffered any hypoxic insults sufficient to cause brain damage or hypoxic ischemic insults sufficient to cause brain damage during the intrapartum period?

A Yes.

Q And what is your opinion?

A My opinion is that there is no evidence to suggest that there was an intrapartum hypoxic ischemic episode that will be significant enough to cause brain

damage.

Q And when you reviewed the records, what type of evidence were you looking for to make that judgment?

A Well, evidence of an acute multi-organ involvement and acute neurological symptoms.

Q Is it your opinion that there was no evidence of multi-organ involvement?

A That's correct.

Q Is it your testimony or your opinion that there was no evidence of acute neurological involvement?

A No, there was -- let me go back. Acute multi-organ involvement on the basis of an ischemic insult. There's certainly multi-organ involvement on the basis of infection.

Q Okay. What about the acute neurological damage'?

A Right. This child had apnea and early seizures which would be attributed to an insult that had occurred some time prior to the birth in the labor process, but subsequent to that really the child did reasonably well in terms of being in the hospital really only a limited amount of time considering the magnitude of this child's problem.

Q Do you believe that the child, in your opinion, improved, or was the child's condition pretty static once it

was admitted to Akron Childrens Hospital?

A Oh, I think the child improved subsequently and then leveled off and was static after that.

Q In terms of the type of neurological damage that you indicated; the apnea and the seizures, are you saying that those findings are inconsistent with a hypoxic ischemic episode sufficient enough to cause brain damage during the intrapartum period?

A I'm not sure I understand that.

Q Can you have a child who suffers brain damage because of a hypoxic ischemic insult during the intrapartum period which will develop apnea at three hours after birth and seizures at approximately seventeen hours after birth?

A Can you -- okay. Let me see if I can just para -- you're saying can you have a hypoxic ischemic insult that will do that? Is that what you're saying?

Q In the intrapartum period.

A Well, I think hypothetically you could if all of the other factors surrounding that, you know, were consistent with that. It would be unusual to have apnea three hours, you know, after birth as a result of an intrapartum episode,

And the seizures at seventeen hours certainly

could occur with an intrapartum event, but the, you know, the other factors that surround that would not be consistent with it and would make the -- put more weight on the fact that the apnea and seizures were related to a chronic event.

Q What other factors are you referring to when you say that they make those two findings inconsistent with an intrapratum asphyxial event or hypoxic ischemic event?

A Well, you have no renal failure, you have no heart failure, you have selective liver involvement and really no acute liver failure. The gamma GT is elevated, but that's due to an infectious basis. The SGOT and SGPT are not elevated, which is what you would see with an acute intrapartum ischemic event. So, the systemic problems that this child has are not one that one sees due to an acute multi-organ lack of oxygen and blood flow.

Q When you have an acute multi-organ failure as you're describing, is that a permanent condition or can it be a temporary condition that is caused by a hypoxic ischemic intrapartum insult?

A Well, it depends on the severity and the organs. Generally speaking, the heart, the liver, the kidneys, and the muscle improve and there is no residual damage. But the brain, which is another organ that is deprived, does not

repair itself.

Q Okay. Is it well -- or is it well recognized in the field of your expertise that a condition which can be described as shunting occurs during a hypoxic insult whereby the body or the fetus shunts blood away from less significant organs to the brain --

A No, and the answer --

Q -- to protect itself?

A The answer to your question is no because of the way you phrased it. If you phrased it as an ischemic insult, yes. Hypoxia doesn't generally do that.

Q Okay. Can you list for me what factors, based upon your review of the records, led you to the conclusion that this hypoxic ischemic insult occurred at least forty-eight hours prior to delivery? What factors?

A You mean the one or multiple events?

Q Pardon me?

A The one or multiple events?

Q Correct.

A Okay. Well, you have a child who is born with depressed Apgar's, who is already neurological impaired evidenced by the microcephaly, and then a series of laboratory studies which support chronic involvement. But

then the most important aspects are a child who has no heart failure, no renal failure, has selective liver involvement and not on an acute ischemic basis, is in the hospital for a ten day period of time or eleven days, and really does not have that severe a neonatal course to be consistent with this child's neurological impairment.

And then you also have a CT scan done at approximately thirty, thirty-one hours which has evidence of cerebral edema of a significant extent and then develops subsequently multi-cystic encephalomalacia and has calcifications which occur early, and these would all be consistent with some event occurring at forty-eight to five days prior to at least that event.

Q All right, If we can explore these a little bit more thoroughly on an individual basis, and my questions will be based upon whether or not these individual items as a constellation of symptoms are consistent with an intrapartum hypoxic ischemic event.

If this child suffered an intrapartum hypoxic ischemic event as the cause for its current neurological problems, would you expect to see depressed Apgar scores at birth?

A Well, let me preface, before I answer those

questions, my answer would be the same to all of those. It's that you don't practice medicine in isolation on a single finding. Okay? You practice medicine based on all of the facts and all of the assessment of the clinical picture, the history, the laboratory findings, and the pathology that can exist. That's the only way you can answer the questions.

Now, if you want to select them out and talk about hypothetically and unrelated to this situation, 1'11 be glad to do that.

Q Well, what I'm interested in doing, Doctor, is I'm interested in seeing how many of these factors and to what extent this constellation that you need to come up with an opinion would be consistent with a hypoxic ischemic event that occurred during the intrapartum period. And what I'm interested in is finding out whether or not depressed Apgar's would be one of the consistent findings as part of the whole constellation for a hypoxic ischemic event occurring during the intrapartum period?

A Well, I understand what you're interested in. Let me, again, restate my hesitancy to answer the question that way unless you can rephrase it hypothetically and unrelated to this situation.

Q Well, I'm interested in phrasing it hypothetically at this point in time. So why don't we talk about in a hypothetical child that's born at thirty-seven thirty-eight weeks of a gestational age that suffers a hypoxic ischemic insult severe enough to cause brain damage of the type that this child has; static encephalopathy, would you expect to see a depressed Apgar score at the time of birth?

A You may or may not.

Q It would not be inconsistent -- a depressed Apgar score would not be inconsistent with an insult of that etiology?

A No, again, we're talking about not etiology. Pathogenetic mechanisms. The hypoxic ischemic -- and ischemia are not diseases. They're just mechanisms. So there are a lot of causes of that mechanism.

Q Would you expect to see microcephaly?

A No, I would not.

Q So at least as a constellation, if one of the symptoms or signs in this constellation is the fact that this child was microcephalic would be inconsistent with an event occurring during the intrapartum period?

A Not only inconsistent, impossible.

Q Okay. What about the lab studies that you were referring to; would any of the lab studies that you observed be consistent with a child such as the hypothetical one I described?

A Now I'm not sure about your hypothetical because you just said hypoxic ischemia and you didn't tell me gestation, factors surrounding that etiology --

Q I thought I did. I thought I said thirty-seven to thirty-eight weeks.

A Yeah, but you didn't tell me the etiology.

Q All right. A placental insufficiency which caused the child to not receive sufficient oxygen and blood to the brain so as to cause severe brain damage.

A That's still not an etiology. Are you talking about an abruption or placenta previa or --

Q I'm talking about hemorrhagic endovasculitis.

A Well, I'm not that familiar with that entity. The -- but, okay.

Q Okay. Would the type of lab values that you found in this record be inconsistent with that hypothetical child?

A Well, causing, as a pathogenetic mechanism, an intrapartum ischemic episode, no, they would be

inconsistent.

Q All of the lab values that you relied upon?

A All the ones that I relied upon, yes.

Q Okay. And what would those be again? Thrombocytopenia --

A Thrombocytopenia, an IGM --

Q Elevated IGM?

A -- of fifty-five.

Q Anything else?

A Nucleated red blood cells of the forty to fifty percent.

Q Anything else?

A Well, the elevated gamma GT in the face of normal renal function studies and in the face of a normal cardiovascular status.

Q Anything else?

A I think there are a few other things, but they'll come to me shortly.

Q And the next you indicated that because there was no heart or renal failure evident, that, in your opinion, that was indicative of insults occurring prior to the forty-eight hours before birth?

A Yes, if you're going to talk about the magnitude

of brain damage that this child has, it is -- would be very inconsistent not to have other significant organ involvement as a reflection of the severity of the hypoxic ischemic episode.

Q The liver damage that this child suffered would be inconsistent with the hypothetical fact situation that I earlier prefaced this question with?

A Well, you have to use liver damage in quotes. The gamma GT, which is elevated, is a product of infection usually and is particularly when other LFT's are not elevated.

Q And how severe does the liver or the kidney damage have to be?

A Well, it's usually renal failure.

Q And the child was not hospitalized long enough3

A No, the child was hospitalized long enough for them to take care of the child, but, you know, a ten day hospitalization for a severely intrapartum asphyxiated infant would be unusual.

Q And that goes along with the fact that his neonatal course was not severe enough?

A Yes.

Q And going to the next factor that you pointed

out, the thirty-one hour CT scan: what would you have expected to find in a thirty-one hour CT scan if this child was the hypothetical child that I mentioned earlier?

A Well, it depends again on the etiology, but probably really nothing. I would have expected to see, on an unenhanced CT scan, what looked like if the child was not affected by another problem such as in this case, a scan which would have read -- been read as probably normal at that time.

Q No cerebral edema? You would not have expected cerebral edema?

A No.

Q If this hypothetical child suffered hypoxic ischemic insult sufficient enough to cause static encephalopathy of this magnitude that this child, Justin Berarducci, has, what would be the earliest time that you would expect to see cerebral edema?

A I've told you. Usually thirty-six, forty-eight, seventy-two hours is the -- you know, it's generally forty-eight hours to five days.

Q Is thirty-six hours the absolute minimum, in your opinion?

A No. I mean, that's seeing the minimal amount of

edema, but we're seeing a lot of edema at thirty-one hours and it doesn't -- you know, these are talking about the -- not only whether it's present or not, but the amount.

Q You've reviewed the report of Dr. Roessmann who discusses cerebral edema and says that he would expect to see it --

A Yes.

Q -- within twenty-four to forty-eight hours. Do you disagree with his opinion?

A I would disagree. That's not supported by the literature and what we understand pathologically of newborns.

Q What is encephalomalacia?

A It means a dissolution of brain over a period of time.

Q And when was that evident on CT scan? I mean, was it on the first one or was it on --

A No, it wasn't on the first one. It was on subsequent ones, but I can't tell you exactly without having those reports in front of me, but I'll be glad to look at them.

Q Well, I don't -- the reports?

A Yes.

Q All I have is the ones from Akron Childrens.
A Yeah, let me see. I think that they were -- I would look at mine, but I'm not sure I can find them.
Q Here's 5/10 -- 5/6 and 5/10.
A I won't look at your highlights.
Q Probably the wrong highlights anyway.
A No, it -- they were the later scans. It's not on the 5/10 or the 5/6 study.
Q Is it your opinion that there should not have been liquification or encephalomalacia on the scans that you reviewed for it to be a condition which occurred in the intrapartum period?
A I'm not sure I understand that.
Q Well, you did indicate that the finding of encephalomalacia was one of the factors that you considered in arriving at an opinion that this insult or series of insults occurred at a minimum forty-eight hours prior to the --
A No, no, I didn't say encephalomalacia. I think that's what you said.
Q Okay. Well, I had it listed on the things that I -- the factors that I asked you to describe that led you to conclude that this child's brain damage occurred prior to --

A No, I didn't list that. That may have been in yours, but I didn't list that.

Q Okay. That doesn't play any part in this analysis?

A No. Not as you've phrased it, no.

Q Doctor, do you have any opinion as to whether or not placental pathology played any part in this child's brain damage?

A Well, I think the placental pathology as described in the record is described as being post infectious in origin. Now whether -- there are people that disagree with that, and I'm not a placental pathologist. So I'm not going to give you an opinion to that. And obviously I understand that there are some differences of opinion, but it's entirely consistent with the rest of the picture. So I see no reason, you know, to say that it is not the case.

Q Well, my question really is gauged at trying to find out your opinion as to whether or not this child's current neurological problem or any hypoxic ischemic insult was as a result of placental insufficiency caused by whatever -- caused because of whatever reason, or whether or not the placental lesions that were described are merely a by-product of an infectious process that had nothing to do

with itself causing this child's current condition?

A Oh, no, no. I think that the -- at least by the baby's clinical condition; the microcephaly, the laboratory data, the course of the child, I would expect to see a problem with the placenta. Now -- and as it's described as being consistent with a post infectious etiology I think is entirely consistent with the rest of the picture.

Q Well, I still don't think we're communicating as far as this one question is concerned. Let me rephrase it.

A Okay.

Q Do you believe that this child's insults or insult in utero which gave rise to his current level of neurological dysfunction was caused because of an inability of the placenta to give him sufficient quantities of oxygen and/or blood prenatally?

A I think it probably contributed over, you know, the last trimester certainly and it's not only oxygen, blood, but also nutrients.

Q And do you have an opinion as to when this placental problem or the placental lesions first manifested themselves?

A No, I don't think I can tell you that.

Q Are some of the opinions that pathologists would

have concerning the onset of any placental pathology be important for you to be able to determine the exact role that this placenta may or may not have played in causing this child's neurological problem?

A Well, you know, I would certainly be open to reviewing any interpretation. You know, if it is not consistent with the remainder of the facts, then you have to say, you know, is that interpretation entirely accurate or is it an over-interpretation of an obvious fact.

Q If, in reviewing your records and being asked to arrive at an opinion on causation, would your opinions be exactly the same as to the probable cause and/or the timing of injury to this child if the placenta was entirely erased from the equation here? If you had no information about the placenta whatsoever?

A No, my -- I -- I think the predominance of the evidence and the facts in this case support an intrauterine infection on a chronic basis and the other aspects that we talked about. Whether we had the placental report or not would not erase that. It would certainly be helpful, as it is in this case and as it is reported in the chart to be post infectious in nature, and that supports the rest of the data.

Now, if you have somebody that comes up with another diagnosis and another disease, I'm certainly open to looking at that, but if it's not consistent with the other data, then one has to say, you know, there may be something wrong with that interpretation.

Q Whose opinion are you relying upon in this case that this placenta was consistent with an infectious process?

A Well, the report in the chart. I can't remember the individual's name.

Q Have you reviewed a report by Dr. Bendon (Phonetic)?

A Whom?

Q Dr. Bendon.

MR. VAN ABEL: He's not seen it. That's the one I just got the other day.

BY MR. HAWAL:

Q If Dr. Bendon, who is a perinatal pathologist, is of the opinion that the microscopic examination of this placental tissue is inconsistent with an infection in the placenta or an infectious process affecting the placenta, would that have any impact upon your opinions in this case?

A Well, I would certainly look at it and then I'd

have to see what he bases that on and then how he's going to explain all of the other facts which are, you know, extremely strong in favor of an obvious etiology. I mean, and if he can explain away those by another etiology and if he has another etiology that is a chronic problem, I have no difficulty with it,

Q Do you feel qualified to comment upon pathologists' observations concerning placental tissue and what is the probable cause as to damage or pathology in a placenta?

A Well, I'm not sure I understand that question entirely, but if you're asking me whether I interpret or accept other peoples' reports such as I do for EKG's or for chest x-rays or for a pathologist who reads muscle biopsies, yes, I do accept those. Okay? And I have to use that in the context of a practicing physician. But as all physicians know, reports have to be consistent with the remaining part of the picture. If they're not, then you have to assess a certain amount of weight to that interpretation, and we get interpretations of all kinds of things which may or may not be correct.

Q All right. In this case is it fair to say that your reliance on the involvement of the placenta has to be

based entirely upon what other placental pathologists will say about the condition of that placenta?

A Yes. I'm not a placental pathologist. I'm not going to interpret that as an expert for you, and I'm not going to read any slides.

Let's take just about a one minute break.

(Short break)

BY MR. **HAWAL:**

Q Based upon your familiarity with placental pathology, Doctor, does a microscopic description of the placenta, if you know, help in determining the timing of a child's brain damage such as in this case?

Can someone look at the placental pathology and based upon that, tell when the most likely time period is of the given child's brain damage?

A You know, I don't think I know the exact answer to that. **All** I can tell you is that you can use that in some data in support of another situation, and other laboratory data along with it, but I think alone it would be extremely difficult.

Q Okay. Before this case,. had you ever heard of hemorrhagic endovasculitis?

A Yes.

Q And in what context or how?
A Well, in the literature. I've never seen anybody with it. I questioned whether it's an entity that even exists, but I just --
Q Based upon what you've read?
A Yes.
Q Do you have an opinion as to whether it is a poor or a good predictor of fetal outcome if someone makes the diagnosis of hemorrhagic endovasculitis?
A You know, I really don't know enough about that to tell you that.
Q Do you have an opinion as to whether or not the description of this child's placental pathology put him at risk for labor and delivery?
A Put him at risk? Well, I think that any infant that is chronically involved can have difficulty tolerating the stress at labor, but how you know that beforehand, I don't know.
Q Okay. But looking at it retrospectively in terms of looking at this child's placenta, can you retrospectively say that this placenta would have put him at risk?
A No, I can't.
Q Okay. Doctor, when you prepared your report of

June 12th, 1990, I take it this report was designed to convey a fair summary of your opinions on causation; is that correct?

A The June 12th, 1990, yes.

Q And in your opinion, Justin suffered a prenatal insult that is caused either by an intrauterine infection or other systemic involvement?

A Correct.

Q All right. What was the type of infection that, in your opinion, this child suffered prenatally?

A I think most likely it would be a viral infection.

Q Is it more probable than not that it was a viral as opposed to a bacterial infection?

A Yes.

Q And what is the basis for that opinion?

A Well, bacterial infections are usually more acute and are usually associated with different laboratory features at the time of delivery rather than with the chronic changes that this child had in terms of the selective liver involvement, the microcephaly, the thrombocytopenia, et cetera.

Q Do you have an opinion as to whether or not it

was most probably the result of an ascending infection or was it something that was transmitted through the mother's blood to the fetus?

A I don't think I know for certain. Obviously there were two placental units and whether this was an ascending infection or blood born, I really don't know.

Q Why didn't it affect the other twin?

A I don't know. It's just known by other twin studies that one can have one fetus that is affected and one that is not and what the selective defense mechanisms are, I really don't think we all know that.

Q What do you mean by other systemic involvement? What does that mean?

A The liver failure, renal failure.

Q All right.

A Heart failure.

Q Well, I'm not sure I understand your report then because you indicate that he suffered an intrauterine prenatal insult that was caused by an intrauterine infection or other systemic involvement?

A Oh, I'm sorry. I thought you were talking about the other systemic involvement at the time of birth.

No, it had to be a generalized process that's

affecting this baby. Whether that is on a basis of some chronic toxin exposure, something that would cause a chronic problem that was occurring over time, that's what I meant.

Q Okay. All right. So either it was an infectious process or toxin exposure?

A Toxic metabolic process that was just not able to be identified.

Q What are the most probable explanations for your use of the phrase other systemic involvement?

You mentioned toxins, you -- what other causes --

A Well, I just don't think there is --

Q -- potential causes go through your mind?

A Well, I'm sorry. I didn't mean to interrupt you.

Q That's all right.

A You know, as you well know, we don't know, in approximately seventy percent of the causes of intrauterine prepartum insults, what the cause of neurological damage is.

And there are other categories such as, for example, carbon monoxide poisoning which may or may not have been detected during an individual's gestation which can cause things like digenesis of the corpus callosum, or microcephaly, or other problems, and whether that's done on a single or repeated basis, and the levels are not known.

Alcohol consumption; even minimal levels can cause developmental abnormalities and chronic changes in brain. So that's what I'm talking about.

I'm not suggesting that those are the case here, but in terms of being complete, I think one has to say that in the absence of infection, there has to be some other systemic explanation for this child's problem.

Q Okay. Doctor, what steps were taken at Akron Childrens Hospital to isolate the source of a cause for infection or even to isolate infection being a possible cause of this child's condition?

A Well, I think they obtained what is commonly termed as torch titers, which selects out certain common viruses which can cause congenital infections. There was also, I think, a nasopharyngeal swab or a rectal swab done for virus. But as you well know, there are a number of viruses which are not selected out by the torch studies that cause intrauterine congenital infections and viruses are not frequently cultured particularly on a chronic basis because they are very difficult to culture and tissue culture. So those were the steps that were done.

Q Anything else done, to your knowledge, to eliminate infection as an explanation for this child's

neurological problem?

A I don't think it was done to eliminate it. I think it was done to identify as best you can and establish the parameters for what you're dealing with.

Q All right. With the thought that this may be an infectious process then, what additional studies or tests were done to determine --

A Well, they did an IGM, which was markedly elevated.

Q Fifty-five?

A Yes.

Q And that's markedly elevated?

A Yes.

Q What is normal?

A Usually less than twenty.

Q Do you believe that these tests were adequate or would you have recommended additional tests to have been done?

A Well, I think it -- the -- you know, it's difficult to look back, you know, in time, The -- I think that those are the standard things that one would look for.

If you're in a place that can do more sophisticated studies, then perhaps those could be done like

some IGM fluorescence on certain tissues and using different tissues, culture lines, and other more sophisticated antibodies, but that's not generally done on a routine basis.

Q What is the most likely pathogen that, in your opinion, was the cause for this child's infection?

A Either -- I mean, a virus and it certainly still could have been in the DNA virus group. The -- even with negative antibody studies. However, Coxsackie, ECHO, adenovirus are not uncommon.

Q Are those the most probable viral agents, in your opinion?

A I think so.

Q Could this have been a Group E Streptococcal infection?

A No.

Q Doctor, do you have an opinion as to whether or not this child suffered from intrauterine growth retardation?

A Yes.

Q What is your opinion?

A The child did.

Q All right. And on what basis do you come to that

conclusion?

A Well, I'm talking about in comparison with the other twin. I think there was some ten ounces less and if you plot it on the growth curve, it really doesn't meet the criteria for intrauterine growth retardation being below the tenth percentile for weight, but it's in about the twenty-fifth percentile or -- the tenth to twenty-fifth percentile depending on which curve you want to use, but it's certainly discordant with the other twin.

Q Does discordant fetal growth mean growth retardation?

A Yes.

Q And was this symmetrical or asymmetrical growth retardation?

A Well, you have to explain to me what you mean by that because different people mean different things by it.

Q Well, if someone asks you what symmetrical means in your mind or what asymmetrical means in your mind as far as it related to IUCR, what do you define those terms as?

A I figured you might **do** that.

The -- that's when the --

Q It's a lot easier than defining it. So, go ahead.

A That's when the height, weight, and head circumference are all the same, which would be symmetrical growth retardation.

In this case it's asymmetrical. The head circumference is in the microcephalic range, and the height and weight are approximately the twenty-fifth percentile, tenth to twenty-fifth.

Q What would you have expected for a symmetrical head in terms of measurement for this child?

A You mean in terms of the absolute number?

Q What would you -- yes.

What is the minimum that you would have expected for this child to be symmetrically growth retarded rather than asymmetrically growth retarded?

A I'm not sure I still understand that.

MR. VAN ABEL: Objection.

BY MR. HAWAL:

Q Well, I believe you indicated that this child suffered from intrauterine growth retardation that was asymmetrical because his head was microcephalic, correct?

A Yes.

Q What would you have expected or what would his head size have to be for his intrauterine growth retardation

to be symmetrical with his length and weight?

A Well, it would have to be at a measurement that would give you that percentile and whether that's -- the baby's head circumference, I believe, was twelve inches at birth or thirty point five centimeters. So, you would have to -- you konw, it would have to be thirty-two, thirty-three centimeters that would be consistent with a thirty-seven, thirty-eight week baby at that percentile.

Q So if his head circumference was thirty-two centimeters, then you would expect that that would be within the range of normal for his length and body weight?

A Well, this -- I think, you know, they did measure thirty-two centimeters at Akron, but that's after the baby is born and after it has time for tissues to swell including brain and increasing in size. This child may have had even a smaller head at birth had not the child already had cerebral edema, so -- but even that would make the child microcephalic because I think the length at Akron was in the seventy-fifth percentile.

Q How accurate do you believe or do you have an opinion as to how accurate the head circumference measurement was at Medina Community Hospital?

A Well, you know, I have to assume the measurements

are valid. Certainly the height and weight are consistent and the head circumference -- there's no reason for that not to be accurate. It certainly goes along with everything else in the chart.

Q It's your opinion that from the time that the head circumference was measured at Medina that it increased from thirty point five centimeters to thirty-two centimeters a based on cerebral edema?

A Or soft tissue swelling on the outside of the head.

Q Could it be a variance in terms of accuracy **of** measurements?

A I think anything is possible, but, I mean, I think again you have to place everything, you know, in sequence and in consistency and everything else would suggest a chronic insult and microcephaly and I think that it's an accurate measurement.

Q I take it you disagree with Dr. Woods, who is the perinatologist who was retained to review this case for Medina Community Hospital, as well as Dr. Gyves, a perinatologist who was requested to review this case by Dr. Olaes, who both opined that this child was not intrauterine growth retarded and was normocephalic at birth?

A Well, all -- and all I can tell you is that the weight is discordant. Okay? Which would mean that the child is of lower birth weight than the other child and has -- and I told you by definition it's not an intrauterine growth retardation, but it certainly is discordant with the other twin, which would suggest a chronic problem. The head circumference speaks for itself.

a Now, you know, those are the charts I use. If they use different charts, then they can, you know, let you know what they do.

Q Did you find that this child was described as normocephalic in the Akron Childrens' records?

A I can't, you know, tell you about every single note. Normocephalic --

Q Do you recall?

A Well, yeah. Normocephalic just means the shape. It doesn't mean the size.

Q Normocephalic means shape and not size?

A Correct, at least as far as I'm concerned.

Q If someone refers to a head as normocephalic or microcephalic, you're saying that those two terms have no comparable descriptive meaning?

A No. Normocephalic means the shape as opposed to

scaphocephaly, plagiocephaly, dolichocephaly, and normocephaly, and size is in terms of micro and macrocephalic.

Q Okay. Are you aware that Dr. Walter Molofsky, who was also retained by Dr. Olaes in this case to testify as an expert, is of the opinion that there was no microcephaly and no growth retardation?

A Well, you know, all I can tell you is you have to go by the numbers in plotting out on the chart. I mean, if they use different charts, then they would have their own interpretation.

Q If this child was not microcephalic at birth, would it be more consistent that his intrauterine hypoxic ischemic insult occurred later in terms in time of gestation rather than earlier?

A Say that again.

Q Sure. If this child was born without microcephaly, with a normal size head circumference, would it indicate to you that his hypoxic ischemic insult in utero severe enough to cause brain damage occurred later in the pregnancy as opposed to earlier than the forty-eight hour minimal interval that you first stated?

A I'm having -- I'm still not sure -- maybe you can

break that down for me.

Q All right. You indicated that the latest time during the course of the pregnancy that this child would have suffered any insult in utero was forty-eight hours prior to birth, correct?

You indicated from five days to forty-eight --

A To explain the symptoms that the child demonstrated at the newborn period, yes.

Q Would that forty-eight hour period be moved closer, could it be moved closer to birth if this child had been born with a normal head circumference?

A No, it would have no effect on it.

Q No effect on it. Okay.

So in terms of whether or not this child is or is not microcephalic at birth has no bearing on that time parameter; is that correct?

A Not that insult, no.

Q Does the fact that, in your opinion, this child has demonstrated microcephaly at birth support your opinion that there was some other chronic earlier insults in utero prior to that five day to forty-eight hour period prior to birth?

A Yes. As I've expressed, you know, it supports

the elevated IGM, the nucleated red blood cells, the abnormal placenta, the -- you know, all of the things that we talked about.

Q If the child is normal -- is not microcephalic at birth and has a normal head circumference, would that indicate that there was probably not a chronic problem with hypoxic ischemic insults or any type of insult sufficient to cause brain damage prior to five days prior to birth?

A No, there are children that are born, you know, severely retarded with intrauterine problems that have normal head circumferences at birth. That, you know, may or may not be a significant factor.

Q Doctor, does a severe hypoxic ischemic insult in utero cause brain tissue to die in utero?

A Sure.

Q Can one look at evidence on CAT scans such as cerebral edema and head circumference to determine the most probable timing of an in utero insult based upon those two correlating pieces of evidence after birth?

A Yes, they're helpful.

Q All right. If I understand the concept correctly, and please stop me if I'm wrong, if a child suffers an insult in utero sufficient to cause severe brain

damage two weeks prior to delivery and brain -- can brain cells then die and then cerebral edema follows within a thirty-six, to forty-eight, to seventy-two hour time period?

A Well, it depends on the mechanism. You know, if you're saying it's due to lack of blood flow, it depends on the amount, the extent, and then the reaction of that particular individual baby to that. You -- if there's enough necrosis, then you will have the reaction of cerebral edema.

Q All right. Does it have to be a severe deprivation of blood for there to be cerebral edema?

A It has to be fairly significant to be able to view it on the CT scan.

Q Okay. If that -- if an insult occurs two weeks prior to delivery severe enough to cause cerebral edema, by the time that child is born two weeks later, would you expect that cerebral edema will have disappeared and the child will be born with microcephaly because -- with microcephaly because the brain simply does not grow any more?

A Well, it would be -- it would be -- depend on the severity of the insult and the gestation. Two weeks prior to a term delivery I would not expect the head circumference

to change a great deal.

Q What about a thirty-seven week old gestation?

A Well, it's the same thing as the time frame. The two weeks would not be enough time to cause significant microcephaly.

Q So if a thirty-five week old child in utero suffers a severe hypoxic ischemic insult severe enough to cause cerebral edema, are you saying that that child born at thirty-seven weeks is probably not going to demonstrate microcephaly?

A Yeah, probably would not because of the vascular supply of the thirty-five week, the thirty to thirty-five week baby is different than the full term infant or subsequent to thirty-five weeks. The basal ganglia, internal capsule, and brain stem are more vunerable at thirty to thirty-five weeks. Subsequent to that the cortex becomes more vunerable on an acquired basis rather than if it occurs during the second trimester or even the first trimester when the migrational and developmental aspects in brain are occurring.

Q What portions of this baby's brain have been affected or damaged based on your review of the CT scans?

A Certainly the cerebral cortex, basal ganglia,

internal capsule. I've not reviewed an M.R.I. scan. So, I mean, just by exam I would suspect that some, you know, portions of the brain stem have been involved.

Q And was that brain stem involvement evident at birth from his clinical course?

A I think that that's really pretty hard to tell just by clinical examination.

Q Well, are episodes of apnea consistent with brain stem involvement or brain stem damage?

A It can be or they cannot be.

Q In this case do you have an opinion as to whether or not his apnea --

A No.

Q -- was or was not due to brain stem involvement?

A No, I really don't have an opinion.

Q Doctor, what do you mean by intracranial calcification in your report?

When talking about or describing that term, when did you observe it, or when do you say it was evident?

A Well, the calcification that -- in the left lateral ventricle that was described in the report.

Q Which one?

Is it one of the first two or subsequent reports

and, again, if you want to look at it --

A Let me just look at those. I think it may have been -- yeah, I know where that is, but I'm talking about the report. It may have been the subsequent report.

(PAUSE)

A I think it's got to be the subsequent -- I think it's the 6/4 report.

BY MR. HAWAL:

Q Well, what significance does that have as it relates to your opinion?

A Well, that type of punctated to cal -- intracranial calcification is usually seen with an infectious process in my experience.

Q So is it -- is that an additional factor that you utilized to support the basis or form a basis for your opinion as to how this incident happened and when it occurred?

A Well, I think it's another factor that is consistent with the total process, yes.

Q Would calcification, intracranial calcification also be consistent with an intrapartum acute asphyxial event?

A It would be unusual in that time frame and

unusual even subsequently to see much calcification on the basis of intrapartum ischemic event.

Q Have you had any special training, Doctor, in -- I know we touched on this earliei. Any special training in viewing CT scans or interpretting them, and I don't mean hands-on training with other neuroradiologists in your clinical practice, but have you taken any specific courses a designed to teach neuroradiology?

A Well, you do that during your training program as being trained in a -- in neurology. You do four months of neuroradiology. And then, you know, it depends on your interest subsequently.

In most institutions that I've been associated with, including this institution in Mobile, we have a weekly neuroradiology conference in which we go over films with multiple radiologists as well as other clinical neurologists. So it's a continuing exposure.

Q All right. But since your initial residency and fellowship program, have you had any formal education in the field of neuroradiology?

A You mean gone and spent didactic time?

Q Right.

A Well, yes. Well, at meetings certainly in terms

of the American Academy of Neurology on neurology, sure.

Q Are you currently affiliated with the Mobile Infirmary?

A That's correct.

Q Is that your primary care facility where you have staff privileges?

I mean, is that where you spend most of your clinical time?

A That's correct.

Q What kind of a facility is it? Is it a full service hospital?

A Yes.

Q What level is it?

A Well, it depends on the services. It has a level two nursery.

Q Okay.

A The only level three nursery is at the University hospital. In terms of other services, it has all intensive care units; medical, pediatric, surgerical, they do open heart surgery here, dialysis, et cetera.

Q Does it have a neonatal intensive care unit?

A Well, a level two nursery, yes.

Q Can thrombocytopenia be consistent with an acute

hypoxic ischemic insult in the intrapartum period severe enough to cause static encephalopathy?

A Thrombocytopenia can occur with intrapartum asphyxial episodes, but it's usually associated with disseminated vascular coagulation or abnormalities in prothrombin and partial thromboplastin times and also with diffuse bleeding.

Q Did they do any PT times here?

A No, but the baby really did not have any evidence of diffuse bleeding which would be, you know, usually consistent and a finding that would lead you to do that.

Q Was there any suggestion on any of the CT scans that there was some possibility of intracranial bleeding?

A I think in some of the reports there was a question, but really, in looking at them and also I would agree with them, that there really isn't any intracranial hemorrhage.

Q So, in your opinion, there was not?

A That's correct.

Q Doctor, in terms of the elevated IGM level, you indicate that that is fairly significant. Let me ask you, is it fairly significant as a basis for your opinion that this is an infectious process which caused this child's

brain damage?

A I think it's -- you know, it's certainly high and it's consistent with an infectious process.

Q All right. Do you recall when it was taken?

A I don't know what date. I'll be glad to look at the laboratory slip.

Q Well, I can tell you when it was, but would it matter to you whether it is early or late in the hospitalization?

A No, not within that ten days. You're not going to get an IGM level within, you know, ten days that's of that magnitude that's not a reflection of an intrauterine process.

Q All right. So if it was something that occurred three or four days earlier than it was taken, that wouldn't cause the IGM level to go up to fifty-five?

A I don't think I understand that.

Q Well, if an infection occurred three days before or four days before the IGM level is determined, would you expect that that could elevate the fifty-five within that time frame?

A No, I think that would be extremely unlikely.

Q It was done on May 8?

A That's correct. That's three days after birth.
Q Right. In terms of this child's condition of the right forearm, do you know if this -- if the right forearm had any type of bacterial infection?
A I don't think they cultured anything, and in terms of what the etiology of it is, I don't know what caused the right forearm problem.
Q Would that have any impact on the IGM level?
A No.
Q Doctor, do you have an opinion, based upon a reasonable degree of medical probability, as to the cause of the skin slough on this child's right forearm?
A No, I just said I do not know what caused that.
Q What about the scalp?
A The --
Q The slough on the scalp?
A Again, I don't know the answer to that.
Q Okay. Does the condition of the right forearm have any bearing on your opinion as to causation?
A No.
Q Do you have any opinion as to whether it could be an intrauterine pressure wound?
A The arm?

Q Right.
A I really have no opinion about that.
Q Do you have an opinion as to whether or not there was meconium in the amniotic fluid during labor?
A Well, I have an opinion, you know, and the problem -- first of all, the child was not meconium stained. Meconium as described -- let me find the exact wording. It is unusual.
So I really don't know one way or the other, you know, if this child did indeed have -- or the mother did indeed have brown fluid from the vagina which is meconium, that would even support more chronic insult. The -- but to have, you know, brown fluid from the vagina and not have any meconium staining is inconsistent. So I really don't know what to tell you.
Q Why is it inconsistent?
A Why is what inconsistent?
Q Why is brown fluid and no meconium staining inconsistent?
A Well, it would indicate extremely old meconium and, you know, I would expect a baby to be meconium stained.
Q All right. Is it generally understood that if -- that with old meconium, the baby does exhibit signs of

meconium staining?

A Well, generally, yes.

Q Would you expect to also find evidence of meconium in the placental tissue, the chorion of the placenta?

A I think you'd really have to ask the placental pathologist.

Q When you say it was old -- I'm not sure you said it was old meconium.

A I didn't. I don't know what it is.

Q All right. I believe you said if it was brown -- if it was meconium and it was brown, it would have to be old meconium; is that correct?

A Well, that's -- you know, in terms of being, you know, brown, dark, thick.

Q Well, how old would it have to be to be brown, dark, and thick?

A You know, I don't know.

Q Isn't old meconium generally yellow?

A No.

Q It's not?

A (Witness shakes head negatively.)

Q If it is meconium and the baby was not meconium

stained, would it not indicate that it was rather new meconium?

A No.

Q Why not? Because of the color?

A Well, no, the color and the length of time that it was there, you know, being at 4/30, the baby being born at 7:00 -- after 7:00. I think 7:41 or thereabouts. 7:56. Excuse me.

You know, I would expect if there was meconium that was in large amounts that was brown, that there would be, you know, some staining of the baby if that is indeed what it is.

Q Well, doesn't it take three to six hours to stain the baby with meconium?

A I don't think anybody really knows the answer to that.

Q Well, have you read obstetrical texts which generally discuss that subject matter; as to the length of time staining -- it takes to stain a baby after exposure to meconium?

A But that data is not based on very good study. It's just their estimates.

Q Would a perinatologist be in a better position to

discuss that subject matter than you would?

A He looks at the same data that I do. I mean, it depends on what data he's looking at and what studies.

Q In terms of the explanation for the brown fluid, did you accept or reject Dr. Olaes' explanation for it and that being that it is probably meconium mixed with blood from the wound on the right arm?

A You know, the meconium does not play a large part in, you know, my opinion in terms of causation and timing. So, you know, it was somewhat confusing to me in terms of the description and then the child. And so, all I can tell you is what is described.

Q If the explanation that Dr. Olaes gives is correct: that it is meconium mixed with blood from the arm, and the baby is not meconium stained which would indicate that it is not old meconium, would that indicate to you, Doctor, that this baby was suffering from fetal distress during the intrapartum period?

A No. I mean, twenty percent of all babies are born with meconium. I mean, it doesn't mean fetal distress.

It can be seen, you know, in certain situations if everything is consistent with that and consistent with an acute event or a chronic event, but the fact that you have

meconium does not tell you anything.

Q Is it an indicator, if you have an opinion in the field of obstetrics, as a warning to exercise extra diligence or vigilance to look for fetal distress?

A Well, I think it is dependent upon the timing, the condition, the delivery, a whole lot of other factors.

Q Would you expect that the nursing staff and the obstetrician who were attending to this labor would be in the best position to determine whether it was or was not meconium?

A I would certainly think the person who saw it and described it would be in the best position. I would agree with you.

Q Do you have an opinion as to whether or not this child was in, more likely than not, in fetal distress during the intrapartum period?

A Yes.

Q And what is your opinion?

A I do not think the child was in fetal distress. I think the child was stressed during the delivery because of the previous problems.

Q In other words, if a fetal heart monitor had been -- an electrode had been attached to this baby, you believe

that the heart patterns, the fetal hearts would not have indicated any evidence of fetal distress; is that correct?

A Well, I think based on -- and again, this would be speculation.

Based on the other data, the ten day hospitalization, the laboratory features, the CT scans, et cetera, it would be my opinion that the fetal monitor would probably be normal.

Q Doctor, do you have an opinion as to whether or not this child's clinical presentation in all the records that you reviewed would indicate that this child's brain damage that he was born with was the result of an intrauterine event that occurred between the sixteenth and twenty-third week of gestation?

A I'm sorry. Did you say all of the brain damage?

Q Right.

A No, I do not think that all of the brain damage occurred at that time.

Q So if a pediatric neurologist were to express that opinion in this case, in your estimation that would be incorrect?

A No, I mean, you'd have to ask him what he bases that on and what are the factors that he uses, and I would

be certainly open to listening to that.

My, you know, review and opinion concerning timing, causation, and etiology, is based on my knowledge and expertise and the data that I've given you.

Let's take -- we've been going about another hour. Let's just take a break.

MR. HAWAL: Sure.

(Short break)

BY MR. HAWAL:

Q I'm sure I have this answer buried or this question buried into another question long before, but I'm going to ask it again anyway.

Can Apgar's of three and six at one and five minutes respectively, the development of apneic spells at three hours of life, and the development of seizures at seventeen hours of life be consistent with an acute hypoxic ischemic insult in the intrapartum period which was sufficient enough to cause brain damage?

A Hypothetically and unrelated to this situation, if the facts were different, yes.

Q Do you have an opinion in this case as to whether or not the placental pathology that is described in the records diminished this child placental reserves at the time

that labor was commenced?

A No, I don't have an opinion.

Q Are you familiar with the term or concept of placental reserve?

A Yes.

Q Is it generally known in perinatal medicine that fetuses are blessed with a certain amount of placental reserve?

A Well, I -- I think, you know, in generalities, you know, as that concept is understood, yes.

Q Do you know how much the normal placental reserve is for a normal fetus?

A In measuring in what units?

Q Well, in percentages out of a hundred percent, how much can be impacted upon and the fetus would still survive up until the time of labor?

A I don't think anybody can really do that, to be honest with you.

Q Do you have an opinion as to what that amount is?

A No, I have no opinion.

Q Have you ever heard of the description that thirty percent of the placenta is available to be damaged or used up by the fetus and still be able to get the fetus up

to labor?

A No, plus I don't know how one, you know, quantitates that in a human fetus.

Q Do you believe that a fetus with an exhausted placental reserve at the time of labor is more likely to suffer acute hypoxic or ischemic insults because of an inability to tolerate the usual stresses of labor that you earlier talked about?

A You know, again, you're talking in broad, vague generalities and I, you know, I understand what you're getting to, but I don't think I can answer the question.

Q All right, So -- okay. You don't have an answer?

A No.

Q Doctor, if a non-stress test had been performed on this child five days to forty-eight hours before birth, do you have an opinion as to whether or not it would have been reactive or non-reactive?

A It could have been either. The non-stress test does not tell you about brain impairment. It just tells you about the status of the heart.

Q Pardon me. It doesn't tell you about brain impairment?

A Brain impairment. It just tells you about the status of the fetal heart tones.

Q All right. Well, in going along with your constellation of clinical findings that are consistent with brain damage, do you not generally have other organ system failure?

A Yeah, but you're still going to have fetal heart tones and you will still have variability unless the baby is about to die or there's something else going on, but you have to understand that the fetal heart doesn't tell you anything about the brain. It just tells you about how the heart is beating.

Q Well, if the child is being exposed to episodes of hypoxic ischemic insults, would not the fetal heart tones be indicative of some type of fetal distress?

A If you were to capture it at that particular time, but, you know, the vast -- the majority of the time it would probably be normal, or else the baby would be dead.

Q Would it be fair to say if this child had had non-stress testing during that time period, there would be times when that stress test would be non-reactive?

A No, that wouldn't be fair to say.

Q So, are you saying then that it would be fair to

say that it would be always reactive?

A No, that wouldn't be fair to say also.

Q You can't have it both ways, I don't believe, based upon the way that question was phrased, Doctor. Either there would be -- let me repeat the question.

If a non-stress test had been administered to this mother from the fifth day before labor to the forty-eighth hour before labor, do you have an opinion as to whether or not there would be times in that interval which would reflect a non-reactive non-stress test?

A You mean on a continuing basis?

Q No, not a continuing basis. At any time? Any time?

A Well, again, the chances of it being abnormal on a intermittent basis are probably pretty small unless one would catch -- you know, if hypothetically an episode of hypotension enough to causes ischemia to the heart to cause bradycardia were there, then you might find some impairment or enough to decrease the -- changes in fetal heart patterns, but, you know, again, the -- it's really an insensitive test in terms of brain damage. You know, it's going to tell you how the fetal heart is doing.

Q If this child had suffered an acute hypoxic

ischemic insult in utero five days before before the onset or five days before birth severe enough to cause the type of brain damage that this child now has, would you expect to have seen the type of CT scan findings that you did on the thirty-first hour of life?

A Yes.

Q All right. So that is entirety consistent?

A Correct.

Q What if there was a singular episode of an acute hypoxic ischemic event severe enough to cause the type of brain damage that this child suffered at the forty-eighth hour prior to birth, would you expect that that CT scan finding at the thirty-first hour of Life would be consistent with such an episode?

A Well, if you're just using that as an isolated factor without all the other data to support it, which is not the way we practice medicine, yes, I would expect at the forty-eighth hour that that could possibly be the CT pattern that you would see,

Q Okay. In your opinion, did this infant exhibit any signs of metabolic acidosis in the neonatal period?

A No, I as recall there wasn't significant -- I think the pH was seven point twenty-two, which is really not

a significant acidosis.

Q Does that have any impact one way or another on your opinions as to when this child's brain injury occurred in utero?

A No, this was really done, I think, at 1407 hours on the 5th and there really is no base excess. So, there's really no way to tell in terms of -- or at least assisting you in terms of accumulation of fixed -- but I would, you know, I would expect with a pH of seven point two two that it would not certainly be any significant metabolic acidosis.

Q Doctor, you examined my client, correct?

A Yes.

Q And was that examination performed at your request or at the suggestion of Mr. Van Abel or someone in his firm?

A I think both his firm and at my request. If I was going to comment on life expectancy, I would prefer to examine the child and sometimes that's not possible.

Q Was your examination intended to be solely related to your testimony concerning life expectancy or was it designed to assist you in anyway at arriving at your opinions on causation?

A Well, I think both. I think that it's often helpful for a physician who is talking or at least evaluating a child in terms of what has caused his problem to evaluate him.

Now as you well know, in medical-legal cases that's not always the case and that's not always possible, but I think it's extremely helpful if one can.

Q Has your examination of this child in anyway impacted upon your opinions on causation?

A No, I think it's been entirely consistent with my interpretation of the records.

Q Well, I guess I'm not -- well, let me rephrase the question.

Were there any features of this child or features of your examination of this child that led you to the conclusion that this was or was not an intrapartum asphyxial event?

A Say that again.

Q Sure. Was there anything about this examination or the appearance of the child at the time of the examination that led you to conclude, based upon the examination, that this was or was not an acute asphyxial event in the intrapartum period, the brain damage that is?

A No, I don't think an examination at this age can differentiate that for you unless there are some other features that would go along with another type of etiology.

Q Did this child have any type of feature or constellation of features which would lead one to conclude reasonably that there's a genetic abnormality that caused his current neurological deficits?

A By genetic, you mean a hereditary disease or a metabolic, degenerative, et cetera?

Q Right.

A I mean, I don't know what you mean by genetic.

Q Well, something that is inherited from his parents.

A Well, I mean, there are many genetic diseases that are not inherited from -- I mean, directly from them.

Q Does this child have any dysmorphic syndrome or anything --

A No.

Q -- that would explain a hereditary cause for his present brain damaged condition?

A No. My opinion is this child does not have a dysmorphic syndrome, nor does he have a chromosomal abnormality.

Q The abnormalities that you referred to in your report, what is the cause of the various abnormalities that you've discussed, without really having to isolate each one, but were some of them due to the level of his brain damage and subsequent anatomical changes because of failure of brain to grow?

A Well, I don't know the answer to that. The child, in terms of the slightly small jaw and slightly high arched palate I think are minimal. The synophrys, again, was also mild and they're minimal. So, I would not place a great deal of emphasis on --

Q I had to look that one up, Doctor, and --

A Well, you've got some yourself.

Q I was just going to ask you that question. Does that have any significance in this case?

A Well, it's fairly common in lawyers, but -- no, I do not think that child has a dysmorphic syndrome.

Q Doctor, what, in your opinion, is the primary cause of this child's diminished life expectancy?

A Well, there are mutliple factors which are involved with that. Predominantly being non-ambulatory, but also his not having any bowel or bladder control, his severe intellectual impairment, and lack of interaction with his

environment, in addition to his gastrostomy and his having to be in a predominantly stationary position.

Q All right. Well, we've got a lot of generalities here. What about his non-ambulatory state is going to diminish his life expectancy?

A Well, the predominant cause of loss of life in a child that is this severely impaired is a pulmonary infection or sepsis. And when an individual is non-ambulatory, has to spend the majority of his time lying down and be moved, then they do not handle the pulmonary secretions and they get infections. Now, some of those can be treated, but usually one will succumb to that.

The other is when someone doesn't empty their bladder because they have no control over it, they get gram negative resistant organisms and they die of sepsis also. So those are the reasons.

Q Does the quality of medical care or attention that this child receives have any impact upon his life expectancy from these problems?

A No, I don't think so. I think that -- I mean, obviously if somebody is totally ignored, it would. But, I mean, in terms of reasonable attention by either an institution or family to a child's needs, it is going to

have the majority of individuals falling within the same range.

Q So if I understand your answer correctly, you would not believe that if an institution in Minnesota were to provide adequate care and an institution in Mantua, Ohio was to provide exemplary care, that that difference would have any impact upon this child's life expectancy if he were confined at the one versus the other?

A Well, you're going to have to explain to me what you mean by adequate and exemplary and what does that entail.

Q Well, I can't run the entire range of possibilities by you, but I'm talking in terms of generalities.

Can an institution's exemplary care impact upon life expectancy in a general sense?

A But what do you mean by exemplary? I mean, I don't know what you mean by that.

Q Well, assume that this child is being moved on an hourly basis at one institution as opposed to an every three hour basis at another institution?

A That will not materially affect life expectancy.

Q Okay. In terms of this child's life expectancy,

then infection is probably the primary cause of his ultimate demise?

A Yes.

Q All right. What infections has he had up until this point in time? He's now over five years of age.

A I don't know. I would have to go through his chart and document that. So, I don't know that.

Q Would you expect that he would have already had some bouts with infection?

A I would expect some, sure.

Q And if he has not had any, would you expect that his care that he's being given at this facility is exemplary care?

A No, that's not what you totally base exemplary care on. I think that it is an extremely fine facility in terms of at least the attention, the responsiveness, the -- my experience with the individuals who are at that facility, I was quite impressed.

Q Had you ever been there before?

A No.

Q Are you currently taking care of any patients who have a condition that is as profound neurologically as my client that are in their thirties?

A That are in their thirties?
Q Yes.
A No.
Q Any in their forties?
A No.
Q Have you ever taken care of any individuals who are as profoundly damaged as my client who have been in their thirties?
A Not as a result of a birth injury, no.
Q What about in their twenties?
A Perhaps. I just don't know.
Q All right. If Dr. Cruse were to testify that he has seen a number of patients that are in their thirties and forties which as severe a neurological dysfunction as Justin Berarducci, has that type of condition been described in the literature, to your knowledge?
A Well, I don't see how that would be possible for Dr. Cruse because he's only forty-five, and as a result of a birth injury he's going to be saying that he's seeing -- taking care of children that are forty?
Q Doesn't mean he had to deliver them or see them at birth, does it?
A No, I'm just saying in terms of where's he going

to find them? If he's only forty-five --

Q Well, they could have been thirty when he went into practice, couldn't they, or --

A Well, I suppose. I would just have to say -- to tell him to show them to you. I mean, I just don't have them and I've asked all of my colleagues and we just don't see them. I mean, I'm happy to acknowledge that if indeed it exists, but I don't know where they are and I have a large practice.

MR. HAWAL: Okay. Thank you, Doctor.

(Off the record discussion)

BY MR. HAWAL:

Q Doctor, let me back up. One thing I forgot.

Doctor, how much of your professional time currently or in the last three years has been devoted to the review of medical malpractice cases?

A It varies from ten percent to twenty percent.

Q All right. And of the total amount of time that you spend in reviewing medical malpractice cases dealing with obstetrical negligence claims, what percentage of your business is related to representing or testifying for the plaintiff versus testifying for the defense on a percentage basis, best estimate?

A You mean in my professional expertise? The majority is for the defendant because that's who asks me.

Q Well, can we quantify that? Is it fifty/fifty, is it seventy-five/twenty-five, is it ninety-five/five?

A In terms of reviewing, it's probably seventy-five percent from the defense and twenty-five percent from plaintiffs.

Q All right. And in terms of the number of cases -- total number of cases that you've testified in either by deposition or trial, what would that percentage be?

A Greater than ninety percent.

Q For the defense?

A Yes.

MR. HAWAL: Thank you very much.

FURTHER, DEPONENT SAYETH NOT

CERTIFICATE OF WITNESS

I, **ELIAS GEORGE CHALHUB**, M.D., do hereby certify that on this the _____ day of _____, 1990, I have read the foregoing transcript and, with corrections attached hereto, if any, it constitutes a true and accurate transcript of my testimony taken on oral examination on July 9th, 1990.

_____
ELIAS GEORGE **CHALHUB**, M.D.

Subscribed and sworn to before me this the _____ day of _____, 1990.

_____
Notary Public, State of _____
at Large

My Commission Expires: _____

C E R T I F I C A T E

STATE OF ALABAMA)

COUNTY OF MOBILE)

I do hereby certify that the above and foregoing transcript of proceedings in the matter aforementioned was taken down by me in machine shorthand, and the questions and answers thereto were reduced to writing under my personal supervision, and that the foregoing represents a true and correct transcript of the proceedings given by said witness upon said hearing.

I further certify that I am neither of counsel nor of kin to the parties to the action, nor am **I** in anywise interested in the result of said cause.

LISA ELMORE PETERS
COURT REPORTER

DEPOSITION OF ELIAS CHALUB, M.D.
[Berarducci]

TAKEN ON July 9, 1990
by WILLIAM HAWAL, ESQ.

Pg / Ln	
10/16-21	Not a NeuroRad, but can read his own films
15/20-23	Hypoxic ischemic insults cause cumulative brain damage But they don't have to.
16/8-9	Individuals can **he** hypoxic with ischemia
19/11-13	SGOT and SGPT = elevated = acute intrapartum ischemic event
37/9	Child. **most** likely suffered **from** a viral infection (39 **Toxic** exposure that **is** not able to be identified) (No head cinc measurements)

51/8 If there's enough necrosis, you will have reaction of cerebral edema

51/11 Severe deprivation of blood for there to be cerebral edema

54/12 Intracranial calcification is usually seen with an infertious process

???? 71 Ph - 7.22 - not a significant acidosis