IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS
STATE OF MISSOURI

JAMES HOLLINS, JR.,)
)
Plaintiff,)
)
vs.) No. 982-8917
) DIVISION NO.
DR. JONATHAN REED,)
BARNES-JEWISH HOSPITAL,)
)
Defendants.)

Depo
Hypoxic ischemic injury results in deficit that is demonstrable on MR

DEPOSITION OF MARVIN D. NELSON, JR., M.D.
Los Angeles, California
Wednesday, May 3, 2000

Reported by:
VIRGINIA PETERAITIS
CSR No. 6205
JOB No. 824183

IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS
STATE OF MISSOURI

JAMES HOLLINS, JR.,)
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Plaintiff,)
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vs.) No. 982-8917
) DIVISION NO. 1
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DR. JONATHAN REED,)
BARNES-JEWISH HOSPITAL,)
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Defendants.)

Deposition of MARVIN D. NELSON, JR., M.D., taken on behalf of Plaintiff, at 4650 Sunset Boulevard, Room MS-81, Los Angeles, California, beginning at 8:45 a.m. and ending at 10:40 a.m. on Wednesday, May 3, 2000, before VIRGINIA PETERAITIS, Certified Shorthand Reporter No. 6205.

APPEARANCES: 2292864

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EXHIBITS

Los Angeles, California, Wednesday, May 3, 2000
8:45 a.m. - 10:40 a.m.

MARVIN D. NELSON, JR., M.D.,
having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. FAHRENKROG:

Q Would you state your name.
A Marvin D. Nelson, Jr.
Q What is your home address?
A The home address or the office address?
Q Residential.
A 5272 La Canada Boulevard, La Canada, California.
Q Who do you live there with?
A My wife and two children.
Q How old a man are you?
A I am 45 years old.
Q Date of birth?
A June 16, 1954.
Q Are you currently employed?
A Yes.
Q By whom?

A By the University of Southern California and by the University of Children's Medical Group.
Q And you have a third employer, your medical/legal employer --
A I'm incorporated.
Q And the name of the corporation?
A M.D. Nelson, Inc.
Q And you're the sole employee of that corporation?
A I am.
Q What is your job title responsibility with the University of Southern California?
A I'm currently the chairman of the department of radiology at Childrens Hospital Los Angeles.
Q I understand you were just officially named the chairman?
A Last August.
Q August of 1999?
A Yes.
Q And as chairman what are your current responsibilities?
A About 30, 35 percent is administrative duties for the department, 20 percent research and the other 50 percent is clinical and teaching of residents and fellows.

Q How many hours a week do you spend wearing that hat?
A Wearing that hat?
Q The hat for the University of Southern California, as chairman of the department with the duties you just itemized.
A I work about a 60-hour week, so divide it up by that percentage.
Q Then your second responsibility is University of Children's Medical Group?
A Yes.
Q Is that part of your percentage of the pie you were telling me about?
A Yes.
Q What portion of your duties is under the heading of the University of Children's Medical Group, is that the clinical duties?
A Both part of the clinical duties and part administrative. I'm on the board of directors of the University of Children's Medical Group.
Q So those first two employers total 50 hours a week?
A Yes.
Q And how would you break it out between those two employers?

A Well, I can't really break it out between those two employers because, in essence, I get a paycheck from each one ever month. One comes because of my academic appointment and all the revenue is generated from here but part of it goes through the university for my academic appointment for the School of Medicine. We pay a part to the dean of the School of Medicine. The part that doesn't go through the university goes through the medical group that does our billing and collecting.
Q Your third hat, M.D. Nelson, Inc., how many hours a week do you spend doing that?
A Four or five at the most, and that's generally off hours, except for things like this.
Q Has that time changed since you became chairman of the department?
A Yes, sir, it's dropped considerably.
Q How many hours a week were you spending a week on M.D. Nelson, Inc., prior to your officially becoming chairman of the department in August 1999?
A On average probably 7 or 8.
Q All right. Let me show you what's marked Exhibit 1, your CV. Is that current?
A Yes.
Q That accurate and up to the date?
A To the best of my knowledge.

MR. BEAN: Double-check. It's the one the plaintiff brought as opposed to yours.
THE WITNESS: It seems to be in order.
(Plaintiff Exhibit 1 marked for identification by the court reporter.)
BY MR. FAHRENKROG:
Q Is there a board certification for pediatric neurology?
A No, there is not.
Q Is there a certificate?
A There are subboard certificates in pediatric radiology, which I have, and subboard certifications in neuroradiology, which I have, but there is not a specific one for pediatric neuroradiology.
Q Is there a certificate of competence or a similar recognition for pediatric neuroradiology?
A No.
Q Have your teaching responsibilities changed because of your assuming the chairmanship of the department?
A No.
Q I didn't note any hours devoted to teaching. Is that subsumed under --
A They're mixed in with the clinical. Most of the teaching is happening at the time we do the clinical

work.
Q Do you have didactic teaching responsibilities currently?
A I don't have a formally designated lecture. I get asked to lecture once or twice a quarter, but I don't have it formally set up as a regularly scheduled event.
Q Did you have before assuming the chairmanship?
A Yes.
Q How many courses did you teach before assuming the chairmanship?
A I had one ongoing course.
Q What was that in?
A Neuroradiology.
Q What level did you teach that to?
A Fellows.
Q That was a didactic course in a lecture format, as opposed to a clinical situation?
A Yes, one hour a week.
Q Turning to page 5 of your CV, your grants. Do any of the grants that you have on your CV have anything to do with the issues in this case, such as you see them?
A No, not directly.
Q Let's turn to page 7 and your peer-reviewed

articles. According to my
to 57 peer-reviewed articl
publication?
A Yes.
Q Any currently that y
not yet been accepted?
A Yes.
Q How many would th
A There is one that ha
accepted but not yet publis
one submitted this week.
Q Have you had any articles submitted but not accepted?
A In the course of my career?
Q Yes.
A Yes. That's the nature of the game.
Q How many would you say?
A Actually, the first authored papers I've gone or other people I've been a co-author on?
Q Either one.
A I'd say 10 or 15.
Q And of the remaining articles, how many would you say were originally not accepted, asked to be rewritten in some fashion or research buttressed and then eventually accepted that you have listed in your CV

amongst the 57?
Or asked another way, how many were accepted the first time of the 57?
A I can't begin to -- almost every article that is submitted the reviewers ask for something to be changed.
Q That's just the nature of the process?
A Right. So virtually -- I have had several, one or two, that were accepted straight out with no changes but that's extremely rare.
Q Of the 57 you have listed on the bibliography here, which of those have any bearing on the issues of this case, such as you're aware of them?
A I would say nothing directly, but indirectly No. 17, the one that has to do with the way the brain vessels develop in the brain and whereabouts the water zones exist in the brain.
Q "The search for human telencephalic ventriculofugal arteries?"
A Yes.
Q Tell me what relationship tangentially the article has to the issues in this case?
A I think I just did.
Q Do it again.
A It has to do with the blood vessel development

in the brain and, hence, where are the vascular border zones and drop of blood pressure and you look for injuries in these locations.
Q And your inspection of the films here resulted in the determination that there were injuries to the vascular border zones, the watershed areas?
A No, there were not.
Q But the ability to describe what it is you're looking for was contained in those kinds of -- that article you mentioned, and therefore the absence of that had some bearing on the issues in this case?
A Yes. That's why I said it was only indirectly related.
Q What besides 17?
A Nothing else I can directly pinpoint on the peer-reviewed articles.
Q How about the two that you referred to in addition to the 57, the one accepted but not yet published and the other one that's been submitted, do they bear at all on any of the issues in this case, as you see them?
A No.
Q Any textbook chapters that you have authored or co-authored?
On page 15 the book chapters are listed and

there are 14 in number, and I'll ask if any of those, in your opinion, have any bearings on the issues in this case such as you're aware of them?
A I'd say No. 12. That would be the only one really.
Q What bearing does it have on the issues in this case?
A This was a -- I'm not sure if it was a consensus, but a workshop at the NIH trying to define what perinatal asphyxia -- and that's a horrible term-- trying to define what that term really meant.
They were trying to arrive at a consensus among the different specialties -- obstetrics, pediatric neurology from the imaging people and to get everybody together so there is an understanding of what was really meant by this.
And I was asked to write something kind of relating to what is the imaging appearance of this and kind of making a first-time stab at using the imaging for timing of injuries as kind of a general guideline and that's basically what that is all about.
Q This is a paper-back bound volume; is that correct?
A Yes.
Q And it was an accumulation of the various

presentations this multi-dis
NIH?
A That's correct.
Q And your particul
A Right.
Q Were you the or
to that particular group.
A Yes.
Q So your name is the only one that ap
the section of the paper-bound publication dedicated
neuroradiology?
A Yes.
Q Approximately how many pages was that, in its printed form, if you recall?
A My section?
Q Yes.
A Maybe 5 or 6, I think.
Q Just kind of a background, broad-based description of neuroradiology, as far as perinatal asphyxia and the signs you'd be looking for?
A Yes.
Q The term neuroimaging of perinatal asphyxia, that's the name of your particular chapter?
A That's the name they put on it. I don't like the term perinatal asphyxia. That's what the conference

was about and that's what they wanted to title it.
Q By "they," you're taking about the officials at the NIH?
A The officials that put the workshop together.
Q This is in 1996?
A Yes.
Q So officials at the NIH were using the term perinatal asphyxia during that period of time at least?
MR. BEAN: Objection to form.
THE WITNESS: Well, obviously, that's the term they used for the conference.
BY MR. FAHRENKROG:
Q And the other subspecialties were neonatology and perinatology, that type of thing?
A Yes.
Q Placental pathology?
A Yes.
Q And did they use perinatal asphyxia as applied to all of those subspecialties in their sections of the book?
A As best I recall.
Q Are you saying that in the neuroradiology community the term perinatal asphyxia is no longer used commonly or that's just your predilection?
A That's my predilection.

Q So it's a term still commonly used in the neuroradiology community?
A In medicine in general.
Q What do you understand your colleagues in neuroradiology to mean by the term perinatal asphyxia?
MR. BEAN: Object to form, and foundation.
THE WITNESS: I would not begin to presume what everybody else thinks it is because that's one of the problems and why they had the conference because it means so many different things to so many different people. It doesn't have a single definition.
BY MR. FAHRENKROG:
Q How about the term asphyxia, what does it mean to you?
A A lack of respiration.
Q Is that meant to comment on whether or not an acidosis is a contingent part of that?
A It means a lack of respiration, period.
Q So asphyxia in your parlance simply describes the lack of a child's breathing, the lack of respiration?
A That's what the word means.
Q But it doesn't have any description as to the effects of a lack of respiration, whether it's respiratory acidosis, metabolic acidosis or a

A I don't norma
textbooks.
Q When you d
which ones do you
A I do it so inf
name or author.
Q Are there r
term perinatal?
A I don't recall.
Q If they do, you're n
the term?
A Again, it's the same proble
don't like the term to begin with. I don't like the usage and it's very diffuse and not very specific and means different things to different people.
So I think it's better to define specifically what you mean, rather than use these blanket terms tha are not well defined.
Q Can you give me two or three standard neuroradiology textbooks currently in use?
A Ann Osbourne's Diagnostic Neuroradiology, Jim Barkowitz's Pediatric Neuroradiology. I still use the Newton and Potts series of cerebral angiography series
Q Do you use textbooks by Robert Zimmerman?
A No.

combination thereof?
A That's correct.
Q Perinatal, what does that term mean to you?
A It's defined as from 20 weeks of gestation to anywhere from 4 to 8 weeks after birth.
Q Now, you're saying this is your particular definition and that's what I asked for.
Are you aware that the neuroradiologic community has a variance or is there any wiggle room as far as that definition is concerned in your colleagues' opinions?
A No. If you go to an obstetrical textbook, that's what the perinatal period is defined as.
Now, many people mistakenly use the term meaning the parturitional period, meaning between labor and delivery, but that's not what perinatal means.
Q So you don't know of any perinatal textbook that is standardly accepted by perinatologists that would define perinatal in the way you have?
A That's where I got the definition, from them.
Q Is there a particular textbook you base that definition on?
A No.
Q What are some of the perinatology textbooks that you normally consult with in your practice?

Q Do you recognize him as a pediatric neuroradiologist who is well thought of in your community?
MR. BEAN: Object to form.
THE WITNESS: Yes, he's a well thought of neuroradiologist in the community.
BY MR. FAHRENKROG:
Q Have you ever co-authored any literature with him?
A I think there was one paper we were co-authors on that had to do with a trial of an MRI contrast agent called gadolinium.
Q Dr. Osbourne and Barkowitz, as best you can recall, how did they use or define the term perinatal in their textbook?
A I don't know. I'd have to go and look it up and see how they use it.
Q Anything else besides that one text you referred to, No. 12 on your CV, that involves the issues in this case, such as you see them?
A No.
Q Are the abstracts pretty much duplications of periodicals?
A Pretty much.
Q So any other publications, other than the

textbook chapters and the periodicals that may touch on the issues in this case you had some authorship of, other than what we talked about?
A No.
Q Let me show you what's marked Plaintiff's Exhibit 2 and ask if you can identify that?
A It's correspondence from Mr. Bean's office to me, dated December 13, 1999, and it's a letter basically asking me to review this case on behalf of the Barnes-Jewish Hospital and listing the three scans that he sent to me to review.
(Plaintiff Exhibit 2 marked for identification by the court reporter.)
BY MR. FAHRENKROG:
Q Does it reference any telephone conversation that both of you had or someone from his office had with you for that letter?
A No, it doesn't reference that.
Q So he merely sent records to you kind of cold turkey, is that your impression?
MR. BEAN: Objection. The letter doesn't say there wasn't a phone call.
MR. FAHRENKROG: It's like medical records, not in the medical records, it didn't happen.
MR. BEAN: Kind of like that, not charted, not

done.
BY MR. FAHRENKROG:
Q Is that a case in your practice, to have attorneys merely send your records without some phone call advising you in advance what the nature of the case is and getting your verbal agreement to review the case?
A Restate the question.
Q Sure. Do some attorneys with whom you work, because of your past experience with them, simply send you records to review with a cover letter, rather than calling you in advance to get your approval to review the records?
A No.
Q So your practice is to more or less insist that attorneys contact you verbally to get advance approval by you to review records that they would then send in the mail?
A Yes.
Q And so you're assuming here, although it's not referenced in the cover letter, that there was some telephone conversation that preceded it?
A Yes.
Q Do you have any independent recollection of that telephone conversation?
A Yes.

Q With whom did you have that conversation?
A It wasn't with Mr. Bean directly. It was with one of his other associates.
Q Mr. Dan Sprin, perhaps?
A Yes, I think so. He called and asked if I was willing to review the case. I was not given any other specifics in it, but just asked and said there were these number of scans to be looked at, and didn't tell me anything more about the case, other than that, and I said, yes, I would review the case for them and sent the films to me and I was glad to review them.
Q When an attorney calls you, what information are you trying to glean in that initial phone call which helps you to screen out some of the cases?
Is it the nature of the case, the age of the case, the number of documents you have to review and the time commitment you have to make, considering your busy schedule?
What is it you're looking for in that initial phone call?
A An idea of how much work there is in the case, how many scans there are to review roughly.
I don't particularly want any clinical information at that time. I'd rather review the films without there being any clinical information to bias

whatever interpretation. I like to look at them cold and very generally first.
Q Does that include the reports? Would you like to have those enclosed with the films?
A Sometimes they come with the reports and I don't look at the reports until after I've reviewed the images. I pull the images out and put them in order and look at them first without going through other information that comes with it.
Q Are there certain types of films you don't review or become involved it in a medical/legal way for whatever reason?
A Certain types of films?
Q I'm talking about neurosonograms, CTs MRIs, PET scans.
A I don't do nuclear radiology, so I generally don't provide interpretations of nuclear imaging studies.
Q How would you define a nuclear imaging study?
A Anything that uses radioactive isotopes for imaging.
Q Commonly considered a diagnostic oncology kind of case?
A Could be.
Q Does that have any use as far as brain injured

babies are concerned from asphyxia or metabolic or genetic causes? Is there a use for radioactive isotopes nuclear imaging studies in that field?
A Generally only on a reserve basis.
Q But, as far as ultrasounds of the brain, CT scans, MRIs, PET scans, brain scans, all of those are within your competence as a neuroradiologist to review?
A Yes, as part of my daily practice.
Q All of those you still currently review?
A Yes.
Q Now, I take it you did not know Mr. Spirn had no relationship with him prior to his initial phone call before December 1999?
A That's correct.
Q Did he reference the fact he was with Mr. Bean, whom you worked with in the past?
A Yes.
Q Have you restricted your practice in such a way that you're not taking on new clients, if you will, new attorneys, with whom you'd had no previous relationship?
A Basically I'm cutting way back on doing medical/legal work because of my increasing administrative responsibility in the department.
Q And is that one of the ways that you're kind of doing it in an organized fashion and cutting back and

A Not to this point.
Q None of your publications involved that area of interest, other than the two you referenced?
A Correct.
Q Have any of the courses you taught involved that particular area of border zones and their vascularization?
A Yes.
Q What courses have you taught in that regard?
A When I was doing my weekly neuro fellow conference, didactic lecture, it was incorporated in there.
I put on a whole special seminar for the Western Radiologic Society that had a meeting two or three years ago that had to do with cerebral vascular development and cerebral angiography and vascular anatomy and things related to that.
Q Have you put on seminars for legal groups?
A I was invited to ASTRA or something like that, back in 1992, and I gave one one-hour lecture on the topic.
Q What did you understand the group of ASTRA to represent?
A I think they were an association of defense attorneys, I believe.

agreeing to only work with those attorneys you've only worked with in the past?
A Generally, that's true.
Q And is this generally 15 or 20 law firms you've worked with in the past, commonly, and the group you intend to continue working with if they request your services for review?
A Well, I'd look at the case on a case by case basis, but I'm generally trying to take care of my backlog of cases and am not adding additional cases onto it.
Q If there was something particularly interesting to you or one of your research areas, that is something you may make an exception for and take it to review?
A Yes.
Q Was this particular case, such as you are now aware of it, within any of your research or teaching or writing areas, such that it was independently of interest to you?
A Well, I'm generally interested in the whole idea of low profusion blood vessel development, vascular border zones, and that type of thing, so in that sense it kind of indirectly falls into my interest.
Q None of your grants involved that particular area of interest, though?

Q And was this in California?
A It was in Washington D.C.
Q This was national group of defense attorneys that you made a presentation to?
A Yes.
Q And I understand that upwards of 90 percent of your testimony has been on behalf of defendants of medical/legal matters?
A Generally speaking. In terms of – well, I would say in terms of overall consultation of cases, it's about 75 percent. In terms of depositions, it would be around 90 percent, and in terms of trial testimony, it would be more like 97 percent defense.
Q I have depositions in my file here where you've estimated in the past that your plaintiff-defense ratio for initial consultation was 80, 20. You're now saying 75 percent. Has that gone down in the last year?
MR. BEAN: Object to form.
THE WITNESS: Yes. There are more plaintiff cases I've looked at for them in the last year or two.
No question.
BY MR. FAHRENKROG:
Q So that's taken down the original consultation percentage from 80 to about 75?
A That's correct.

Q Has there been any effect on your testimony percentage of 90 percent in deposition and 97 percent at trial for defendants?
A Overall, no, I don't think so.
Q Now currently, then, what plaintiffs' firms have you chosen to continue a relationship with, despite your increased administrative responsibilities as chairman?
A I have not chosen. I don't have a list I made where I choose one particular firm or another. I basically am trying to take care of my backlog of cases and not really take on any new cases.
Q Obviously, this was a new case you took on after assuming your role as chairman of the department in August 1999? There's correspondence here taking place in December 1999.
A That's correct.
Q What was it then about this particular case, which was clearly a new case after your new duties, that persuaded you to take it on?
A I don't know. They called up and asked me to do it and I said I would.
MR. BEAN: I caught him on a weak day. I would have preferred the answer of Mr. Bean's incredible intellect and he enjoyed the challenge of working with

me.
MR. FAHRENKROG: You didn't tell him he was the second choice after Dr. Barnes either.
MR. BEAN: Paralegal screw-up.
BY MR. FAHRENKROG:
Q You had worked with Mr. Bean in the past?
A Yes.
Q And did that have some relationship, do you feel, in your deciding to accept this case in December of 1990 because of that previous relationship?
A Yes.
Q Give me an estimate of the number of cases up to date as to those that you've worked with Mr. Bean or his firm?
A I think just two or three previous cases.
Q So this would be the third or fourth case?
A This would be the third case that I can think of and I can't remember specific names.
Last September – I think last September I came to St. Louis for a trial that was conducted by – that involved a case with Mr. Bean but I don't remember the name of the case.
Q Was Herman Praszkier the plaintiff's attorney on the case?
A I don't recall.

BY MR. FAHRENKROG
Q Kudro (sic) or –
MR. BEAN: Kiu
BY MR. FAHRENKR
Q Stephanie Klu
A That sounds
Q That's the or
for?
A Yes.
Q On behalf of Mr. Bean; correct
A Yes.
Q Have you testified in court at trial in St. Louis, other then on the Kluba case, at any time in your career on a medical/legal matter?
A Not that I recall. That was the first time.
Q So, perhaps, that's not a fair number but at least a hundred percent, one out of one of your trial testimony in the St. Louis area have been on behalf of the defendants in a medical/legal matter?
A Yes.
Q When you talk about your cases where you've been retained that arose out the St. Louis area, where a lawsuit is pending in the St. Louis immediate area, there have been obviously additional cases, the other two with Mr. Bean, and there have been other attorneys,

as well, in the St. Louis area that used your services?
A I think there is one or two other firms in the past.
Q All those were on behalf of the defendant?
A I don't recall.
Q Well, do you recall working for any plaintiff attorney on behalf of any plaintiff on a medical/legal matter in the St. Louis area?
A No.
Q How about the state of Missouri?
A No, not that I can recall.
Q So all your retentions on medical/legal matters in the state of Missouri, including the St. Louis area, have been on behalf of the defense?
A As best I can recall.
Q Now, appended to Exhibit No. 2, the cover letter from Mr. Bean of December 13, 1999, were three documents; is that correct?
A Yes.
Q And what were those three documents?
A The official report for the three imaging studies included in the package.
Q So within the cover letter and the package that you received shortly after December 13, 1999 were the films and reports on the three separate head imaging

studies?
A Yes.
Q And, as was your practice, I take it you set the records aside and looked first at the films?
A Yes.
Q Is it your practice normally to look at the oldest one first and then take them chronologically?
A Yes.
Q And so you would first have looked at the brain scan in this particular case from October 26, 1978?
A Yes.
Q Can you tell me in lay terms so that the ladies and gentlemen of the jury can understand what a brain scan is?
A Well, in this case, the brain scan was a nuclear medicine or nuclear radiology procedure, in which a radioisotope, and in this case appears to detect Technisium 99, which is a common tracer used, is attached to some molecule, and I think in this case it was DPTA, and then injected in the blood stream and then allowed to circulate for a period of time.
Then the patient sits next to an imaging device that picks up the little scintillations of the isotope and makes a picture basically of how it's distributed in the brain tissue.

Q Did I understand you currently that your practice doesn't include this type of study, this nuclear radiologic procedure?
A Right. I don't normally interpret those images.
Q You have competence and expertise in interpreting the kind of brain scan that was sent to you in this particular case?
A It's included overall in diagnostic radiology and it's included on the board examination when you become a radiologist, and that's one of the fields tested.
But my practice since then is specialized in the field of neuroradiology, which doesn't include the nuclear imaging complement.
Q Was there anything about the brain scan of October 26, 1978 that you found helpful in arriving at your opinions and conclusion about causation and timing in this child's injuries?
A No.
Q What was the state of the artery, as a matter of curiosity, of brain scans in 1978?
A Imaging the brain in general or nuclear imaging?
Q Yes. The kind of brain scan done in this case

that you described
the new procedur
A It had been
new procedure.
Q Was the te
competence of b
scans and render
causation and tin
A Based on
Q Yes.
A No, I thinl
Q It's more
and that type of thing?
A I don't think -- it's not a very good imaging tool for the brain in general. Its principal use now is mainly for one of defining a medical/legal definition of brain death, more than it is for defining anatomy or injury of the brain.
Q The second thing you did, you first looked at the brain scan and found there was nothing helpful in the brain scan film that you examined and then you nex went on to the CT scan of September 15, 1982?
A That's correct.
Q Was there anything about the CT scan helpful tc you in arriving at any opinions in this case regarding

causation and timing?
A Other than it looked essentially normal to me, no.
Q Let me show you what's marked as 3-A, 3-B, 3- and 3-D and ask if you can identify those.
A This is the non-contrast CT scan dated September 15, 1982.
MR. FAHRENKROG: Off the record.
(Discussion off the record.)
(Plaintiff Exhibit 3 marked for identification by the court reporter.)
BY MR. FAHRENKROG:
Q Let me show you what's marked as part of Exhibit 2, the CT scan report.
You indicated that your reading and interpreting the actual CT scan films themselves, mark 3-A, B, C and D did not yield much in the way of abnormalities?
A That's correct.
Q On the report itself, if I can refer that to you, are there any abnormalities noted in the opinion o that radiologist at Barnes Hospital?
A Well, the first line of this brief report states that he felt there was slight prominent of the sulci, the little valleys between the bumps on the

surface of the brain, and minimal prominence of the ventricles for the patient's age, meaning the fluid filled spaces inside the brain.

That's a very nonspecific finding and often that can be developmental. A lot of children have a little bit of prominence of ventricles and sulci that are not related to any specific insult. So, in and of itself, that doesn't mean anything.

Then he goes on to say that this could be secondary to the previous encephalopathy that this patient has had and, obviously, he makes that statement because he knows something in the history that's bee given about the patient or led down that way because of some previous history that he was given.

Then he goes on to say on, however, he doesn't see anything abnormal in the brain parenchyma itself.

Q What's the brain parenchyma? What does that mean?

A The substance of the brain tissue.

Q So it includes all the white and gray matter?

A Yes.

Q Anything else included besides the white and gray matter in the brain parenchyma?

A No. That's what the parenchyma means.

Q Taking the terms individually, slight

prominence of the sulci. Is that an abnormal finding, assuming it's there?

A No. I wouldn't say it's abnormal. A slight prominence of the size of the ventricles in the sulci is not in and of itself indicative of underlying brain injury.

Q Do you agree there is a slight prominence of the sulci, as indicated on the films 3-A, B, C and D?

A I understand what he's looking at, but I would not have said that about the scan, if I interpreted it.

I would not put that line there because it doesn't mean anything and it doesn't add to the interpretation and I would not have said that.

Q Keeping in mind that you would not have said that in the report, do you agree there is a slight prominence of the sulci, even though you would not have mentioned it in the report if you were the original radiologist?

A I would not have said it and would have thought it was within normal limits.

Q Generally if something is within normal limits, it's not referred to in the radiology report?

A Yes.

Q So his indicating there is a slight prominence of the sulci, is it fair to infer from that that he felt

it was not within normal limits and would not have mentioned it?

MR. BEAN: Objection to form, foundation and speculation.

THE WITNESS: You have to ask him that. It's his opinion and his report.

BY MR. FAHRENKROG:

Q Generally if the sulci are within normal limits, it's not something mentioned within a radiology report; correct?

MR. BEAN: Same objection.

THE WITNESS: In my interpretation, yes.

BY MR. FAHRENKROG:

Q Then the second finding, very minimal prominence of the ventricles.

First, do you agree there is a very minimal prominence of the ventricles for this patient's age?

A No, I think they're within normal limits for the patient's age.

Q If you were the radiologist doing the original interpretation, you would not even have mentioned there was a minimal prominence of the ventricles?

A That's correct.

Q Because you feel it's within normal limits?

A Yes.

Q Normally, if something is within normal limits, it's not mentioned on a radiology report like the prominence or the size of the ventricles?

MR. BEAN: Same objection.

THE WITNESS: That's correct.

BY MR. FAHRENKROG:

Q So if you were the radiologist originally interpreting these films, you would disagree with this hospital radiologist and you'd put down no abnormalities noted, normal CT scan film?

A Yes.

MR. BEAN: Object to form, foundation.

BY MR. FAHRENKROG:

Q What was the stage of CT imaging in 1982?

How long had it been around and used in the normal teaching environment such a Barnes Hospital?

A Well, I don't know how long it had been at Barnes Hospital but the overall state of CT imaging was fairly well developed and already into their fourth -- pretty close to their third or fourth generation of CT scanners.

Q Can you reconstruct what type of CT scanner was used on this particular film in 1982?

A A Siemens Somotom 2.

Q Does that imply that's a second generation of

Siemens Somotom?
A That's the model number. In terms of the generation of CT scans, this is at least a third generation CT scanner.
Q Where were you in 1982, what were you doing?
A I was finishing my diagnostic radiology residency at Loma Linda University and took my board exams and passed those in diagnostic radiology and then entered the Air Force.
Q You graduated from medical school in what year?
A 1978.
Q Did you do any work in medical school with CT scanning?
A As a medical student, going down and reviewing the images on patients that were being done.
Q This was at Loma Linda?
A Yes.
Q Do you know how long Loma Linda had their CT scanner as of 1978?
A I think they had CT scanning in 1974.
Q And Loma Linda was obviously a teaching institution?
A Yes.
Q Like Barnes Hospital?
A Yes.

Q Any reason to think Barnes had it before 1974?
A I have no idea.
Q So the first generation came out in 1974 or around that period of time?
A Yes.
Q By the time 1982 rolled around, it's your impression or recollection they were into their third or fourth generation?
A Yes.
Q And, obviously, each successive generation had better resolution and quality of imaging studies, including the brain?
A Yes.
Q Is the particular quality of this CT scan diagnostic, the copy you reviewed?
A Yes.
Q Is this a Siemens Somotom?
A Yes.
Q How would you characterize that particular level of scanning, you know, compared to today?
Are we in the 12th generation today? How far has it come?
A We're now in about the 6th generation of CT -- 6th or 7th generation of CT scanners.
Q If the current CT scanners that you use in your

practice had been used on this child in 1982, would you be able to visualize more than seen on this particular film, in your opinion?
A Well, it all depends. A lot depends on the techniques you use and how thick the slices are and a lot of things. This is a diagnostic study and I have no problem with this study. It's very comparable to the studies you get today, if you get CT scans.
Q How thick are the slices?
A They appear to be 10 millimeters thick.
Q Currently you're using 5-millimeter slices?
A My protocol is 5.
Q So you're getting images on your own CT scans that are twice the level of this particular scanner using 10 millimeters; correct?
A I'm sure if they had so desired, they could have done 5 at that time.
Q But they chose not to?
A That was apparently their particular protocol.
Q You feel today, currently, that you can get much better information using 5-millimeter slices on the CT scanning than the 10 millimeter slices?
MR. BEAN: Object to form.
THE WITNESS: It's my own personal preference because the type of patients we receive here -- we're a

basically tertiary care hospital where we get the difficult cases, so that rather than doing multiple exams trying to look for things, I try to give the highest quality exams up front to answer the problems.
A lot of institutions still do CT scans like this, with 10 millimeter slices.
BY MR. FAHRENKROG:
Q Barnes doesn't do that? They do 5 millimeters currently, don't they?
A I have no idea what their protocols are.
Q Do you know that Barnes is a tertiary care center?
A Yes.
Q And it's reputed to be in the top five hospitals in the United States?
A Top five? Well, I don't know that. By what ranking?
Q The Barnes ranking and Mr. Bean's ranking.
A Well, whatever. I'm sure they're a fine institution.
Q Would you say that all the top neuroradiology departments in the teaching institutions in the country today in the tertiary care centers use 5 millimeters slices to diagnose brain injury?
MR. BEAN: Object to form, foundation.

THE WITNESS: I can't speak for everybody but I wouldn't be surprised if they did.
BY MR. FAHRENKROG:
Q And the reason you use 5-millimeter slices, as opposed to 10-millimeter slices is that allows you to better diagnose abnormalities of the brain?
A Yes.
Q Taking the CT scan just by itself, in isolation, were you able to render any opinions regarding the causation or timing of this child's injury that occurred at a time some four years before this in the perinatal period, such as you defined?
MR. BEAN: Object to form. It assumes a perinatal injury.
MR. FAHRENKROG: It's still not broad enough.
MR. BEAN: Object to form.
THE WITNESS: First of all, I didn't see abnormalities of date or time, so I had nothing to date or time back to any -- have an injury to time to begin with.
BY MR. FAHRENKROG:
Q Are you currently aware this child had certain abnormalities motorically and cognitively?
A Yes.
Q What's the child's current condition, as you're

aware?
A He has fairly limited ability in terms of -- he can walk with a wide gait. His I.Q. is fairly low, and something in the range of 50's, and that he has other problems, neurological development problems.
Q Seizure disorder?
A Seizure disorder --
Q Dysarthria?
A -- given the basic diagnosis of MRCP, mental retardation, cerebral palsy.
Q Has his condition been described as spastic quadriplegia or quadriparesis?
A No, that's generally under the realm of cerebral palsy.
Q So that's not different from your understanding?
A No.
Q In a child with that sort of disability, are you expecting on a 1982 CT scan, using 10-millimeter slices, that you would be able to find some abnormalities on that CT scan on a hundred percent of the occasions?
A No.
Q Are you then able to render any opinions to us, based on reasonable medical certainty, about the absence

of any significant abnormalities on this 1982 CT scan?
A In my interpretation of these images, I see no significant abnormality, period.
Q And I'm saying, assuming that's correct, are you then able to render any opinions regarding the timing or causation of this child's injuries, such as you posited them to be, when put in the context of this negative CT scan at age 4 years of life?
MR. BEAN: Using the CT only?
BY MR. FAHRENKROG:
Q Yes, just using the CT only.
A Well, that's kind of a complicated question. I think the best way for me to answer that is to say that in my own experience there are many cases of children that have MRCP that have high resolution magnetic resonance imaging or have high resolution CT imaging in today's world that we don't find abnormalities on and still have these problems.
So you can't say -- I can't predict what the neurologic state of a child is just based on what the imaging findings would be.
Q In other words, there are kids today who have CP and MR and the various combinations thereof, who you do imaging studies on, including CT and MRI, and you find no abnormalities contained on the CT and MRI but

you know clinically these kids are severely impaired?
A That's correct.
Q Conversely, there are kids who have abnormal MRI's and CT's that you see in a vacuum, let's say, and you find abnormalities and you'd expect this is a child who is going to be impaired in some fashion, motorically or cognitively but clinically those children seem to be doing pretty well?
A Right.
Q So if I ask you to just look at the CT scan from 1982, are you able to make any conclusions about the causation, first of all, of this child's cognitive and motoric disability such as you posited them to be?
A No, I can't make a statement about that based on the images.
Q And the timing would be the same response, you couldn't make any opinions or render any opinions or any medical conclusions based on the timing of this child's injuries just by looking at the imaging studies in a vacuum and not considering the clinical scenario?
MR. BEAN: Again, just the CT?
BY MR. FAHRENKROG:
Q Yes.
A Well, I think the remarkable thing for the CT scan is the absence of demonstrable damage to the brain

and the lack of areas of necrosis in vascular border zones, given the history that the child had severe problems during labor and delivery.

Q. Well, you've already posited that there can be children who have severe disability, motorically and cognitively, and have normal CT scans such as this child had; correct?

A. Correct.

Q. So what conclusions are you able to make just on the basis of this child's normal CT scan, based on the causation and timing of the injury?

A. The thing I can state is that I don't see evidence of a low profusion injury to his brain from a drop in blood pressure from some kind of catastrophic event during labor and delivery.

Q. All right. Would it also be true that there are children who have low profusion injuries around the time of birth in the peripartum period, if you will, who wind up with significant cognitive and motoric disabilities who have normal CT scans?

A. Well, then it depends on how do you define that the child had low profusion injury, without having evidence of dead brain cells?

Q. Well, let's say the child died and the pathology was done on the child, MRI scanning or CT

scanning was originally done, and then the child died and had a pathology workup done, and that pathology revealed no injuries in the watershed areas that you'd expect --

MR. BEAN: The film is negative?

BY MR. FAHRENKROG:

Q. And the film is negative. Any imaging studies were negative prior to that point. Let me go back.

Let me hypothetically posit for you a situation where a child has motoric and cognitive injury, and the head imaging studies are done and are negative, including the watershed areas you'd expect to see those injuries on the imaging studies, and the child then dies.

The autopsy is done on the child and pathology is done, and this child has, in fact, those areas of injury pathologically. Is that something that can be medically consistent in your opinion?

A. No, I've never seen a case like that.

Q. So you're saying, from what I understand, in these watershed areas there is a hundred percent correlation between actual cellular brain injury and the ability of CT and MRI scanning to pick up that injury?

A. I'm not saying it's a hundred percent but it's extremely sensitive.

Q. So just the fact that you've nev doesn't mean it can't occur?

A. Well, I can't make a hundred statement like that. I mean that's ar... statement the way you made it.

Q. Let's back up a little bit and see if I understand what it is you're saying.

You're saying that when low profusion or hypoxic ischemic injury occurs to a child in the peripartum period, that has a tendency to affect these watershed areas in such a way that it's normally demonstrable in head imaging studies.

Am I correctly stating your opinion?

A. Yes.

MR. BEAN: Object to form.

THE WITNESS: They go through a set pattern of when they've reached a point where they're killing brain cells that sets off a whole set sequence of things that happen that show up on our imaging studies.

BY MR. FAHRENKROG:

Q. Let me take it broader than just the peripartum period, meaning during labor and delivery.

Let's say the child sustains a hypoxic ischemic injury 24 to 48 hours before labor begins, and then delivery takes place.

Would you expect in that scenario to see head imaging evidence of these watershed damaged areas on your imaging studies?

A. In the 24 to 48-hour period, probably not. Those imaging studies would most likely be fairly normal looking.

MR. BEAN: I think you're talking different time frames.

THE WITNESS: He's talking 24 or 48 hours after the insult.

MR. BEAN: No.

MR. FAHRENKROG: I'll restate it.

Q. Let me restate it so there is no misunderstanding.

I'm hypothesizing for you a situation where 24 to 48 hours before birth a child sustains a hypoxic ischemic insult, a low profusion insult to the areas including the watershed areas.

Let me ask you to assume that at that time the mom is not in labor and never goes into labor but a C-section is done for whatever reason 24 to 48 hours after that injury has occurred.

If subsequent head imaging studies are done, CT and MRI, based on today's technology would you expect to see low profusion evidence of that hypoxic ischemic

injury on your imaging studies?
MR. BEAN: Object to form.
THE WITNESS: Yes.
BY MR. FAHRENKROG:
Q That would not be any different than the injury occurring during labor?
A No.
Q You'd still expect to see injury depicted on the head injury studies?
A Given the right sequence and serial imaging, yes.
Q Is it fair to say that any time in the third trimester that if a low profusion insult occurs to a child's brain, basically a hypoxic ischemic injury, that you would expect to see some effect in the watershed areas of that child's brain on head imaging studies subsequent to birth?
A If it causes dead brain cells, yes.
Q Well, that's the effect that hypoxic ischemia has, it causes dead brain cells, doesn't it?
A To the degree it kills the neurons, yes.
Q Well, normally, you'd expect in a child with this kind of damage, and I'll hypothesize for you a 48 I.Q., spastic quadriparesis, CPMR, seizure disorder, that's the sort of thing that involves dead brain cells

including neurons, does it not?
A Sometimes yes and sometimes no.
Q Are you saying this child could have a peripartum injury from hypoxic ischemic encephalopathy in the low profusion areas where neurons are not involved, and that would not be demonstrable in head imaging studies taken after birth?
A No, I'm not saying that. I'm saying there are other causes, albeit ones of genetic causes, of basically not putting the brain together in a proper fashion or having proper connections, that can cause these kinds of serious neurologic problems without there being imaging evidence of damaged brain cells.
Q But that would not then have to involve a hypoxic ischemic event, the brain cells can be damaged without a hypoxic ischemic event from a genetic of chromosomic problem?
A Not so much that they're damaged but that they were never formed or functioned properly on the basis of normal development and not on secondarily being damaged.
Q Are you saying you're arriving at an opinion in this case that there are genetic, chromosomal or metabolic causes for this child's injuries?
A I'm saying it's a possibility and not saying that's specifically what's wrong with this child. But

it's certainly a possibility.
Q You're not saying based on reasonable, medical certainty that you feel as a neuroradiologist this child's brain injury is a result of genetic chromosomal or metabolic causes?
MR. BEAN: Object to form.
THE WITNESS: I don't have a specific diagnosis based on absolute medical probability or more than 51 percent medical probability or whatever that I can label on this child as the cause of what the problems are.
BY MR. FAHRENKROG:
Q This is an area we need to be precise about so I need to ask you further questions to try to elicit your opinions in this regard.
I understand that you would not be able to form a particular genetic disability on this child, Prader-Willis syndrome or whatever it may be, but what I'm asking you is can you say and do you have an opinion you intend to render at trial, based on reasonable medical certainty, with 51 percent certainty or more that you feel this child's brain injury was caused by genetic, chromosomal or metabolic causes?
A No. And I'm not going to opine any specific diagnosis to that degree of medical certainty.
All I'm going to say is, number one, I don't

see vascular border zone necrosis in this child's brain that would suggest the drop in profusion pressure as the cause of the injury.
Two, any nonspecific injuries that we can see on the follow-up MRI imaging that may or may not be related to his overall neurologic condition, and that there are many things that could have resulted to cause those, one of which is inborn air metabolism that they have not been able to define. Failure of development, proper development within the child on a genetic basis, without there being specific congenital malformations seen in the brain.
Like, for instance, children born with trisomy 21 or Down's syndrome, their imaging studies are perfectly normal yet their brains are not properly put together.
Q Trisomy 21 kids have certain morphologic abnormalities that clinicians can fairly readily pick up on; correct?
A They have different genetic features they often pick up on.
Q Did you make any attempt in this case to analyze the clinical data and evidence to combine that with your neuroradiologic data to form some opinions on causation or timing?

A No.
Q You have not reviewed the clinical records at all?
A No.
Q The opinions you tend to render at trial, if asked, are based on your neuroradiologic interpretations of the CT's and MRI's provided to you?
A That's correct.
Q So you have no knowledge as to whether or not this child has any morphologic or other abnormalities consistent with some series of genetic, chromosomal developmental or metabolic syndromes?
A That's correct.
Q You're merely saying that from your neuroradiologic standpoint, these are possible explanations for the failure of the CT and MRI to have certain abnormalities that you'd normally expect to be present?
MR. BEAN: He's saying a lot more than that. Object to form of "you are merely saying."
MR. FAHRENKROG: I didn't say merely saying --
MR. BEAN: Do you want the question back?
THE WITNESS: More or less I agree with that statement.
BY MR. FAHRENKROG:

found a moderate amount of increased signal intensity identified in the periventricular white matter.
Am I correctly interpreting that?
A That's what the report states.
Q Do you agree with that?
A Well, I don't know if I'd say moderate but there definitely is increased signal in the white matter around the ventricles.
Q So you would say maybe less than moderate, in your opinion?
A I would say mild to moderate.
Q Now, on an MRI scanner what causes tissue to have an increased signal intensity?
A There is more water present in the tissue than normally on that -- we're talking about the T-2 weighted sequences -- we're talking an increased signal on T-2 weighted images would be either an absence of tissue with cerebral spinal fluid present there or a generalized increase in water content.
Q A softening of the tissue?
A No, that implies you can touch and feel it. That's a pathology term.
Q But the tissue is somewhat less dense than you're normally expect it to be?
A Density is relating more to CT scan.

Q Let's look at the MRI report. Did you find any abnormalities in the MRI, the film you reviewed?
A Yes.
Q So unlike the CT scan film, you found abnormalities in the MRI film?
A Yes.
Q Feel free to put them up on the shadow box, if you want, or if you remember what they are, list those for me, as to what the abnormalities were that you found in your reading and interpreting the MRI film of 1994?
A Well, basically, I agree with the report that was made on this, with one addition, that I think there is a little bit of focal high signal in the pulvinar region of the thalami bilaterally.
Q Focal high signal in what area?
A Well, the posterior part of the thalami. These are big masses of neurons in the base of the brain. And then in the focal areas in the white matter around the ventricles in both hemispheres as described in the report.
Q Let's look, then, at the report and kind of get for the record what abnormalities were noted by the radiologist who dictated the report and make sure you agree with all of those findings.
First of all, it looks like that radiologist

Q I'm having trouble understanding intensity versus density. What lay term or concept can you liken to help us understand?
A Basically magnetic resonance imaging is mapping out the water distribution in the brain and using the water molecule to make the images, so it's giving you a basic distribution of tissues.
The difference in T-2 and T-1 has to do with the way you make the water molecules dance around before they give the signal off and you measure it.
Q So it doesn't necessarily mean that if there is more water molecules in tissues in the periventricular area that it's much less dense, the tissue itself, it just means it has more water content?
A Has more water content than it normally should have.
Q What in your opinion would cause water molecules to collect in the periventricular area and be demonstrable on an MRI scanner?
A At this age of life?
Q Well, if it's different ages, it's different reasons, you can tell me about that.
A Well, to me it means that the basic matrix of the brain tissue in that region is it's either not properly formed or has been injured, so that there is

more water present there than there should be.
So that means there either can be a loss of supporting cells there that subsequently are filled in with cerebral spinal fluid or the extra cellular space or there is a failure of myelination, the fatty sheet put around the axons. So if you have a lack of that, there is more water present. Normally those fatty sheets are hydrophobic and drive the water away from that region.
Q On the MRI, you can't tell whether this is open space, like in a ventricle filled with cerebral spinal fluid or still has some integrity of brain tissue around the ventricle but with a higher water content?
A It appears more the latter, because looking at the T-1 weighted images, the other set of sequences, there are no holes there. This is just an abnormal signal on the T-2.
So it looks like the substance is there and not completely destroyed and removed, but it's just a problem with the way it's put together.
Q Is that visualizeable on the CT scan?
A Probably not.
Q So the inability of the CT scan to pick up on this finding, if it was present in 1982, would not be unusual? It's not the nature of a CT scan to do that?

A That's correct.
Q So it may have been there in 1982?
A Yes.
Q So this may not be something that's evolving or developing but could be a static encephalopathy?
A Without having a second MRI scan, I can't say yes or no to that question, but it appears it's probably static.
Q Would you agree that hypoxic ischemic events are static encephalopathies?
A The end result after the event results in static encephalopathy.
Q Certainly by 1982 and 1994 and by the year 2000 that's static encephalopathy from a hypoxic ischemic event occurring in 1978?
MR. BEAN: Is that a hypothetical question or are you talking in this case?
BY MR. FAHRENKROG:
Q In general, using those time frames.
A Assuming no other catastrophes to the child, yes.
Q You're not aware of any subsequent catastrophes this child has experienced after birth, are you?
A After this particular set of sequences, after his initial hospitalization?

Q Right.
A No.
Q No motor vehicle accidents or falls that resulted in increased brain injury or that type of thing?
A Correct.
Q Generally is it true that genetic, chromosomal, metabolic causes are degenerative encephalopathies rather than static encephalopathies?
A They may be, yes.
Q But you saw no indication from the imaging studies you read and interpreted of any degenerative encephalopathy here?
A Again, to make those statements, you need to have the time series to make that statement absolute.
Q Well, I understand that you'd like to have subsequent MRI's or subsequent CT scans, but you have a CT and a subsequent MRI, and the benefit that those have in the sequence setting, you were not able to determine the presence of any degenerative encephalopathy in this case; is that a fair statement?
A Yes.
Q Can a hypoxic ischemic event result in an increased signal intensity in the periventricular white matter as demonstrable on an MRI?

A Without causing any damage to the overlying cortex, I'd say no.
Q I think you took the question more broadly than I meant. I meant to isolate that on that area of the brain. Let me restate it.
Can a hypoxic ischemic event result in increased signal intensity in the periventricular white matter, as demonstrable on an MRI?
MR. BEAN: Asked and answered.
THE WITNESS: There, as well as in other places, but not isolated to that region, no.
BY MR. FAHRENKROG:
Q So the answer is, yes, it can cause damage – a hypoxic ischemic event can cause damage to the periventricular white matter, but you'd expect damage in additional areas, such as the cortex, as well?
A Yes.
MR. BEAN: Object to form.
BY MR. FAHRENKROG:
Q Let's look at the next abnormality. On the report it says a high signal in the peritrigonal regions bilaterally, left greater than right. Is that the next abnormality noted on the report?
A It's, in essence, the same abnormality. The trigone is just talking about a specific part of the

periventricular white matter, the area adjacent to the trigone and to the lateral ventricles.
Q By high signal is that a severe amount of increased signal intensity, is that what high refers to or does it refer to some geographic area in the brain?
A He used increased before and instead of saying increased, he's saying high. It means the same thing.
Q He doesn't use the term mild, moderate or severe to describe this area; correct?
A That's correct.
Q How would you characterize the signal intensity in the trigonal area? Would you describe it in your interpretation as mild, moderate or severe?
A Moderate.
Q So overall the periventricular area has a mild to moderate increased signal, but the trigonal area you'd agree is a moderate increase?
A Yes.
Q Is that why he, in fact, would have noted it separately in that he feels there apparently is an increased area of signal intensity in the trigonal area?
MR. BEAN: Object to the speculation as to what he meant.
MR. FAHRENKROG: Withdrawn.
Q If you were the radiologist interpreting this

film, would you also specifically refer to the trigonal area because that had a higher increased signal than the periventricular area in general?
A I think I would have mentioned the peritrigonal regions primarily, rather than I would have reversed the way he stated it here, but, generally, I think that's a true statement.
Q You'd normally start out with the most affected tissue, highest signal, and go down the line from there?
A Right.
Q It looks like he also says there is a thickening of the calvarium in this report; is that correct?
A Yes.
Q Is that the next abnormality that he notes or am I missing something or glossing over something because I don't intend to do that?
A Well, he makes a statement about counterextension of the white matter abnormality does extend anteriorly within the central semiovale.
That basically states what he -- it's another way of stating what he stated in the first line, so I don't know why he said. It's a little confusing, but, yes, the next abnormality then goes on to the thickening and no structural abnormalities are identified within

the brain.
Well, he already identified a structural abnormality so that's a little confusing, but he's talking about there is not any gross absence of brain tissue.
Q Is the central semiovale in the periventricular area?
A Yes.
Q So when you describe these abnormalities in the periventricular area, that would include the central semiovale and you personally would not signal that out to additionally comment on that area?
A No.
Q When you said that his comment of no structural abnormalities are identified within the brain, that you would not agree with that and you feel he's already referred to a structural abnormality, are you talking about his description of the periventricular white matter?
A Yes.
Q So the thickening of the calvarium, is that an abnormality if, in fact, it's present?
A Yes, that's an abnormality.
Q Do you agree that there is a thickening of the calvarium on the MRI films you inspected?

A Yes, I think it looks a little thicker than normal for his age.
Q And then you said by way of a fourth abnormality that you would have an additional finding that's not noted by this particular radiologist and that's a focal high signal in the post --
A Posterior part of thalami known as the pulvinar.
Q So we've talked about all the four abnormalities that you found on your inspection of the MRI?
A Yes.
Q Now, was there anything then about those four abnormalities that you noted on the MRI which allows you to render any opinions about the causation of this child's clinical abnormalities that we talked about, CPMR, et cetera?
A No, not directly. These are fairly nonspecific findings that can happen from any number of etiologies that I can't specifically point to and say, yes, this is the cause and this is what's causing all of this child's problems.
Q Would all of these MRI abnormalities be consistent with this MRCP syndrome that this child has?
A No. I could not say that -- I could not

predict that this child will have MRCP based on that MRI.
Q What types of abnormalities based on this MRI would you predict such a child generically would have?
A I can't predict anything specifically in terms of generic neurologic abnormality.
I think this child would be neurologically abnormal but I couldn't specifically say what specific abnormality this child would have.
Q So looking at this particular MRI film of 1994, and finding these four abnormalities just in a vacuum, without having any idea about what this child's problems are, you would not begin to try to predict what kind of abnormalities this child would likely have?
A That's correct.
Q Would you say that it's possible from this MR abnormality contained in the film that the child could have MR and it's not something that's inconsistent with the appearance of this film?
A Yes.
Q Would you say this child could have CP, and that would not be inconsistent with the appearance of this film?
A Yes.
Q Would you say that this child can have a

seizure disorder that would not be inconsistent with the appearance of this film?
A Yes. But a child can have all of those things and have an absolutely normal appearance of the scan, too.
Q Could a child with this film and these four abnormalities be neurologically normal, in your opinion, and clinically not have any disabilities at all?
A I think it's possible but unlikely.
Q Would you say that the range of neurologic disabilities on a child with the abnormalities demonstrated on this MRI film could be anywhere from mild neurologic disabilities to extremely severe disabilities?
A Again, I have seen severely disabled children with normal scans so, yes, you can have the full range.
Q Is it more than the absence of findings from this MRI, like the absence of findings from the CT, that is most helpful to you in arriving to any opinions on causation in this case?
A Yes.
Q What is it, then, you would be looking for and expect to be present on this MRI that you're not finding that you feel would be consistent with some hypoxic ischemic insult?

A Areas of vascular border zone necrosis of brain tissue.
Q Where are the border zone areas of necrosis of the brain tissue that you'd be looking for?
A Primarily in the cerebral cortex where the three major cerebral arteries anastomose over the surface of the brain. They anastomose over the surface, the farthest area from the heart, up over kind of under the area of where the whirl of your hair is posteriorly and then extend in a zone between the anterior and middle cerebral arteries in the 10:00 and 2:00 o'clock position in the cortex, and in the 5:00 and 7:00 o'clock position between the posterior middle cerebral arteries, and at the very end distribution of the big penetrating vessels that come up from the base of the brain, so that you would look for zones of necrosis in the regions of the most superior portion of the putamen, caudate and thalamus, and I don't see those present in this brain.
Q And you are saying it's more likely than not that if the child sustained a hypoxic ischemic event at any time during the pregnancy, which had some contributory cause significantly to his present injuries, you would expect to see those types of abnormalities on this MRI scan?
A If they occurred in the third trimester or

beyond.
Q We're talking about the 26th week on, approximately?
A Yes.
Q So you're saying that the absence of these findings in the watershed areas that you think are characteristic of low profusion injury caused by hypoxic ischemic problems would manifest on an MRI film if that hypoxic ischemic incident occurred any time after 26 weeks?
MR. BEAN: And sufficient to produce the neurologic injuries this child has?
BY MR. FAHRENKROG:
Q Yes, I think that's inferred.
A Yes.
Q So what I hear you saying is that the cause of this child's neurologic injuries, because of the absence of these findings, puts additional weight on genetic, chromosomal and metabolic and less weight on hypoxic ischemic as being the cause of this child's injuries?
MR. BEAN: Object to the form of the question. Less weight, I think he ruled it out.
BY MR. FAHRENKROG:
Q You may answer.
A Yes.

Q We've talked in terms of kids with severe disabilities can have no abnormalities on the MRI scans, and I'm not a hundred percent sure that I understand your degree of certainty of abnormalities in the watershed areas, if they were caused by hypoxic ischemic injury, as to whether in a hundred percent of those occasions they would show up on head imaging studies such as this CT and MRI.

Can you go into some detail for me on what your degree of certainty is in that regard, considering the absence of those findings?

A If you have death of brain cells in the vascular border zones, they don't just occur as one or two or three cells. They occur in zones when this happens. They occur in clusters and zones. When they die, they die in groups. And I'd expect to see those on the MRI imaging and even on the CT scan I would have expected to see some evidence of it.

Q Do they die from infarction?

A Well, the term infarction means necrosis in a vascular distribution, so if you're talking -- I'd call it border zone infarction. That's a correct term.

Q Is there thrombosis involved in that process?

A No. Thrombosis implies occlusion of the artery and the whole distribution beyond that would die.

~~What we're looking at in a low profusion state~~ is a drop in blood pressure and a drop in profusion pressure so that area of the brain doesn't receive the nutrients it needs to stay alive and it doesn't allow to take away the toxic metabolic by-products out of the area after the metabolism occurs in the brain cells.

It's kind of a failure of the blood supply to the region more than anything else on just a profusion pressure basis and not on an obstruction of the flow to it or away from it.

Q So it's an ischemic rather than a hypoxic problem?

A Yes.

Q And you're saying that something about the pregnancy resulted in a low blood pressure or low ability of the mom to pump blood to the baby's brain or is that the baby's heart that is pumping into the baby's brain?

A We're not talking about this case and we're talking about what causes low profusion injury in general?

Q Yes?

A The baby's heart starts to fail as a pump for any number of reasons, and that can be failure of getting nutrition from the mother, it can be from septic

shock. It can be from torn placentas or ruptured umbilical cord. There are any number of things that can interrupt with that ability to do so.

Q But what you're saying is if it was some sort of torn placenta or umbilical cord problem causing this profusion problem that resulted in this child's problems with the heart pumping mechanism to profuse the blood to the baby's brain, and it doesn't show up on subsequent head imaging studies, that means that must have occurred before the third trimester?

A No. It means there was not sufficient enough of a problem to cause a drop in profusion pressure to kill brain cells if it had occurred.

If you end up with necrosis of brain cells before the third trimester, you end up with a whole different pattern of injury in the brain because the brain is still developing and it develops around a whole different set of abnormalities that you'd expect to see on the imaging that are certainly not present in this case.

Q Migrational abnormalities?

A Migration around destructive events and that's not present.

Q The neurons and the death of these clumps, the neurons you're talking about, does it have any

relationship to gliosis?

A Gliosis refers to the astrocytes being stimulated to form gliofibrils within their cytoplasm as a kind of mechanism for supporting injured tissue. There are normal areas of gliosis in the central nervous system, typically around the ventricles that has gliofibrils within the astrocytes more likely because of the pulsating nature of the ventricles and they're moving, and every time the heart beats the ventricles pulse and give strength to the tissues around the moving structures.

You normally have gliosis of the spinal cord because of the bending and twisting nature of the spinal cord that provides support to the tissues. For some unknown reason there is normally gliosis in the hilus in the inferior olivary nucleus in the medulla and no one knows why, but it's a well-known fact.

I like talking about gliosis. That's one of my papers I didn't get published.

Q I understand that you don't have any clinical information on this particular child, but if I were to hypothesize for you that there was no indication that this child had any septic problems or any cardiac function problems, as far as the pumping mechanism of the heart and that type of thing, if I were to rule out

for you a scenario, such that there was no indication subsequently that this child had pumping problems to profuse the brain at any time during the pregnancy, would that affect any of your opinions in this matter?
A No.
Q Why not?
A Because my opinions are based on the imaging findings and not upon the specific clinical findings in this child.
I would leave the interpretation of the clinical neurologic exam of the child and the clinical things relating to labor and delivery for the other appropriate experts to talk about, and that's beyond the scope of my testimony.
Q But at least your clinical knowledge and understanding is that in order to cause the profusion problems, which you think happened in a hypoxic ischemic event, in order to cause these kinds of injuries, if that's what happened, that means there must have been some difficulty to the heart acting as a pump and profusing the brain sometime during the pregnancy?
MR. BEAN: Object to form.
THE WITNESS: If it occurred, and that's why since I don't see that pattern, I don't see evidence of that. But that means I don't see evidence of death of

brain cells in that distribution.
There could have been some problems that didn't result in death of brain cells to that degree, so I can't rule that out that there were not problems like that but just not to the degree that ended up causing vascular border zone necrosis.
BY MR. FAHRENKROG:
Q If, in fact, there was a genetic, chromosomal or metabolic cause for the injury in this particular case, does that still work through the process of affecting the child's pumping mechanism and resulting in low profusion or some totally independent mechanism of injury?
A Yes, that's completely different. It has nothing to do with profusion pressure or anything.
Q So that would be a formation problem of the tissues themselves?
A Correct.
Q So you're meaning to talk about if it was a hypoxic ischemic cause, that's how the hypoxic ischemic cause may occur through a pumping problem with the heart mechanism from a variety of sources?
MR. BEAN: That's not present here, and so to the extent your question assumes it is, I object.
BY MR. FAHRENKROG:

Q For a group of cells, dead tissue, necrotic tissue, to be seen on an MRI in 1994 with this type of MRI scanner -- and feel free to consult the films to see what kind it was -- how many cells are we talking about must be end to end, if you will, and what kind of size of mass are we talking about in order to be seen?
Are we talking about a hundred cells? Ten thousand cells? A million cells?
What clump or group of cells would have to be necrotic to be visualizeable on this particular MRI scanner in your opinion?
A Something in the nature of a half of a cubic millimeter.
Q And how many brain cells are we talking about to constitute that half of a cubic millimeter?
A I don't know. Probably on the order of thousands.
Q Potentially even tens of thousands?
A Potentially.
Q So, stating it another way, if you had a group of dead brain cells that was, let's say, 8- or 9- or 10,000 together that were damaged, that may not be visualizeable on an MRI scanner in 1994?
A In and of itself, the way you stated your question, yes, that could be true. But the mechanism

and injury don't occur like that.
Q Now, have you written any articles that set out this requirement that you put on this, that these watershed cells in a low profusion situation, like a hypoxic ischemic event, are virtually always observable or identifiable on MRI or CT scans?
Have you published any articles to that effect?
A No.
Q Have there been articles published to that effect in peer-reviewed literature that you're aware of?
A Not that I'm aware of.
Q So is it fair to say this is a theory of yours, that in order to have hypoxic ischemic low profusion causation for brain injury, MRCP, the syndromes this child has, it must be visualizeable on an MRI scanner, is that a theory of yours or the subject of some study and medically proven?
A No. And I doubt if it will ever be proven because you can't experiment with human beings in that particular environment. To make a statement like that, you have to have some kind of control group and then you have to be able to measure and have to be able to measure the cardiac output of the child, the oxygen content of the blood going to the brain, the glucose

content of the blood going to the brain, and these are not things that anybody would ever agree of trying to measure under labor and delivery conditions.
Q Are there reputable neuroradiologists that because this is a subjective area who feel that, in fact, hypoxic ischemic insults can cause damage to the brain and not be visualizeable on the MRI scanner?
MR. BEAN: Object to form.
THE WITNESS: I don't know. You have to ask them.
BY MR. FAHRENKROG:
Q But nobody has published on it, one way or the other, so you don't know what the feelings of other neuroradiologists are?
A Again, if somebody tried to publish on it, I'd have the same objection. Without having a proper control group, and how do you define that control group and measure it, which is why there is no literature out there on it to begin with. It would never pass a peer review to get published that way.
Q Why do you suppose it is that of all the attorneys that want to seek your consult, that 80 percent work for the defendant in these cases?
MR. BEAN: Object to form, foundation.
THE WITNESS: I have no idea. I think a lot of

this -- I don't advertise and never advertised. I think it's word of mouth. Some I get referred because of other consultants that know me that do this and that are interested in having somebody looking at the images and say I know this guy and give him a ring. It's not that I selectively say yes or no. It's just the way they come to me.
BY MR. FAHRENKROG:
Q And I'm not trying to be critical --
A I don't ask if you're defense or plaintiff when you call up.
Q I understand. But your opinions in this regard that if a hypoxic ischemic insult is responsible for brain injury syndromes that on imaging studies there should be damage demonstrable to watershed areas, those are opinions you've held for a number of years?
A Yes.
Q And those are opinions you've testified about in these medical/legal matters for a number of years?
A Not specifically the way you stated them. I mean, the kind of cases I get involved with are all across the spectrum and not just damaged brain because of labor and delivery cases.
Q I understand that. But the fact that you have an opinion that you held for a number of years that

hypoxic ischemic injury results in d
watershed areas that's demonstra
studies, that is something that's k
community, is it not?
MR. BEAN: Object to form.
THE WITNESS: I don't know. I don...
is known or what is not known.
BY MR. FAHRENKROG:
Q This is not the first time you've testified to your belief in that regard, May 3, 2000?
A No.
Q So anyone who wanted to get a copy of your previous depositions or worked with you in the past and was aware you've testified that way and found a case where there were not these abnormalities in the watershed areas on particular MRI scanning, in their cases they'd know what your opinions were in that regard, if they asked you to review a case, would they not?
A Yes. And I've been fairly consistent over the years.
Q And I'm not being critical of you, but doctors, like lawyers and everybody else, have a spectrum of liberal versus conservative on various issues of belief?
MR. BEAN: What do you mean by liberal and

conservative? It's not a question of liberality versus conservative.
MR. FAHRENKROG: It's all politics
Q You may answer.
A Do you want to try that again?
Q I'll withdraw it. Mr. Bean knows where I'm going with this.
Doctor, if you have to spend two days away from your practice to come to St. Louis to testify in this matter, what would your charges be?
A $400 an hour for time lost from my job.
Q You charge ten hours a day, do you not?
A Yes.
Q So that's a total of $8,000 you'd charge to come to St. Louis, if you had to take two days out of your practice to do it?
A Yes.
Q That's not an unreasonable estimate to come to the middle of the country, flying from Los Angeles?
A No.
Q And we've talked in terms of the percentage and allocation you do for defense, and you indicated that in the past, I think, you have one case a week -- at least you did before you became chairman of the department of new cases that you took on, about 50 a year?

A Yes.
Q And that's gone down?
A Yes.
Q What is it currently?
A I'm trying not to take any on.
Q What's your backlog of cases, medical/legal?
A About 50 cases still active.
Q And between August, when you became chairman, and the present time, how many new cases would you say you've taken on?
A I don't know; four, five.
Q So of the four, five new cases you took on, Mr. Bean was successful in having you take this on as one of those four or five?
A Yes.
Q That's again because of your past relationship with Mr. Bean?
A More or less.
MR. FAHRENKROG: That's all the questions I have.
MR. BEAN: I don't have anything. Do you want to read it?
THE WITNESS: Do I want to read this? Only if you make me.
MR. BEAN: We'll reserve.

MR. FAHRENKROG: I get the original.
MR. BEAN: I want a copy. And just send me the signature page and I'll get it to the doctor.
MR. DAVIS: I want a copy.

I, MARVIN D. NELSON, JR., M.D., do hereby declare under penalty of perjury that I have read the foregoing transcript of my deposition; that I have made such corrections as noted herein, in ink, initialed by me, or attached hereto; that my testimony as contained herein, as corrected, is true and correct.

EXECUTED this _____ day of _____,

2000, at _____, _____.

(City) (State)

_____

MARVIN D. NELSON, JR., M.D.

I, the undersigned, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that any witnesses in the foregoing proceedings, prior to testifying, were placed under oath; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; further, that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney of any of the parties.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: _____

_____

VIRGINIA PETERAITIS
CSR No. 6205