(Witness sworn)

MARCELLA DONARUMA,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q. *(BY MS. ONCKEN)* Good afternoon.

A. Hello.

Q. Can you please introduce yourself to the jury?

A. Hello. My name is Marcella Donaruma.

Q. And I think the judge might be raising the volume. You might want to pull the microphone a little bit closer.

A. *(Complies.)*

Q. Okay. How is that?

A. Can you hear me?

Q. I think so. Okay. Where are you currently working?

A. I'm employed by Baylor College of Medicine to work at Texas Children's Hospital and the Children's Assessment Center of Houston.

THE COURT: Did we change something? I can hardly hear her at all.

MS. ONCKEN: I know. Is the mike even on?

THE COURT: Yes, it's on. Okay. Just

talk louder.

THE WITNESS: Yes, your Honor.

Q. (BY MS. ONCKEN) Okay. Or you can move it aside and just project. Okay. So, you work at Texas Children's Hospital. And what do you do there specifically? What part of the hospital do you work in?

A. So, I am under the section of emergency medicine and the section of academic general pediatric and I spend 100 percent of my time in the field of child abuse pediatrics.

Q. And is it fair to say that Texas Children's Hospital is sort of the premier hospital in Houston when it comes to child care?

A. That's what all of our P.R. says. Yes, I believe that we work at a very high quality center of medicine.

Q. Okay. And the case that we want to talk to you today about involves an infant named Kamron Kelly who was treated in your hospital.

A. (Nods head.)

Q. March and April of 2010.

A. (Nods head.)

Q. And at that time -- and I'll go back to you a little bit more, but at that time would it be

normal if a child starts out at another hospital like L.B.J to be transferred to your hospital because you're the experts?

A. Yes. It's called a "transition to a higher level of care." So, if they come into a general emergency room that doesn't have specific pediatric facilities and they're, as Kamron was, in need of higher level and intensive life support, very often those hospitals will transfer them to us because we're what's called a "tertiary" --

THE COURT: Doctor --

A. -- meaning we have more subspecialists than most --

THE COURT: Doctor, you're going to have to slow way down. This court reporter is -- her eyes are like this giant. She needs to keep up.

THE WITNESS: I will do so, your Honor.

Q. *(BY MS. ONCKEN)* All right. Then I would like you, if you could briefly just let the jury know kind of your experience, your schooling, medical training, and all that that's gotten you to where you are today.

A. Okay. I graduated from Texas A&M. Then went to medical school at Baylor College of Medicine.

I went to St. Louis for my pediatric internship, my pediatric residency. And I was asked to stay as chief resident in pediatrics. Then I did what at that time was called a "child protection and forensic pediatrics fellowship," which was subspecialty training in the area of what is now called "child abuse pediatrics." I was hired here in 2006 here in Houston. And I passed my pediatric certification board exam and then I was eligible for the very first child abuse pediatric subspecialty board exam and I passed that exam.

Q. How many -- do you know how many doctors locally have that specialty and passed that board exam?

A. In Houston there are six of us, I believe.

Q. Okay. And your specialty again, just to make sure I got it correct?

A. Is child abuse pediatrics.

Q. Okay. And you have been working in the field of child care or child abuse for how many years now?

A. For six years now, and then my fellowship.

Q. How long was your fellowship?

A. It was one year what we called "intensive." So, I did the clinical work that most do in two years

in one year. So, just a few vacations and a few weekends off.

Q. Wow. All right. Then let's go back to Kamron Kelly. Were you the attending physician on Kamron's case?

A. I was attending in child abuse pediatrics as a consultant for him.

Q. Okay. And, so, what does that mean to be a consultant on a case?

A. So, what that means is that if Kamron had a sudden problem, like a drop in his blood pressure or a seizure, his primary attending critical care intensive care doctor would take care of him. A consultant comes in to answer a specific diagnostic question, and in this case it would be: Are these injuries consistent with an abusive injury, or does this raise the question of an underlying medical problem? So, I was the consultant.

Q. And is that because you are the specialist in the area of child abuse?

A. Yes, ma'am.

Q. Okay. And did you make a determination in Kamron's case?

A. Yes, ma'am, I did.

Q. And what was that determination?

A. What I stated was that his injuries were consistent with abusive head trauma.

Q. Okay. Let's talk about -- well, first of all, let's introduce a few things.

MS. ONCKEN: At this time the State would like to offer State's Exhibit 110, which is the medical records from L.B.J. Hospital that have been on file for more than 14 days, a business record affidavit, and also State's 111, which are the Texas Children's Hospital records which also have been on file for more than 14 days with a business record predicate. And defense has copies.

MR. HOCHGLAUBE: Judge, we've reviewed these. We don't have any objections to them.

THE COURT: Being no objections, State's 110 and 111 will be admitted.

MS. ONCKEN: Thank you.

Q. (BY MS. ONCKEN) All right. And just in case you need to review those documents, now, did you also just before you testified also review what has been admitted as State's Exhibit 1, the autopsy report in Kamron's case?

A. Yes, ma'am. I scanned some sections. I have not read it cover to cover.

Q. Okay. So, I'll put that up there so we can

reference that if needed. Did you have an opportunity to discuss your findings in terms of your opinion that it was a child abusive case?

A. With the medical team?

Q. Well, okay. I guess first question: Is that something that you do with a team?

A. Yes, ma'am.

Q. And is this also -- is it kind of a training for other medical personnel as well to sort of understand what to look for?

A. Yes. We are a teaching hospital. So, there are doctors at all stages of learning: Those that have just graduated from medical school, those that are in the middle of the pediatric training, those who are in fellowship subspecialty training in intensive care, and then the attending. So, it's a team process.

Q. And did you also talk to a police detective from the Houston Police Department? Would they have been interested in your findings?

A. Yes. I can't recall a specific conversation, but that's part of so many of our cases.

Q. Of course. Now, I want to ask you about a term that I'm sure a lot of people have heard, the

term shaken baby or shaken baby syndrome.

A. Uh-huh.

Q. Do you -- how do I say -- you believe in that?

A. I believe this constellation of injuries certainly exists. We try very hard to avoid the term shaken baby syndrome because we weren't there. So, we now call it -- in the child abuse field we call that "abusive head trauma." I believe infants can suffer head trauma from child abuse.

Q. Okay. My question here then is: Based on your consultation and everything that you know about Kamron's injuries, was he, in your opinion, merely shaken or was this something more?

A. I believe this was what we would formally have called "shake and impact syndrome."

Q. Okay. And what was the major injury that baby Kamron had?

A. Brain damage.

Q. Okay. In addition to brain damage, under your observations at the hospital, did you observe any fracture to the baby's skull?

A. Yes. He had one fracture on the left side of his head back here in the parietal bone, which is behind the ear up high. *(Indicating.)*

Q. And after having a chance to review or discuss the medical records -- I'm sorry -- the autopsy, that reveals actually more than just the one that you observed; is that correct?

A. Yes, ma'am. That's correct.

Q. Why would an autopsy be able to reveal more than you were able to see?

A. Well, often we miss what are called "hairline fractures" in babies because they're what we say "acute," meaning fresh. Fresh fractures, which people sometimes call "hairline fractures," don't always show up on an x-ray when they're just that hairline crack. But rather we get followup films to look for signs of bone healing where the bone cells all rush to the injury and they make sort of a bone bandage to keep those two ends together. And, so, we could miss those fractures on an x-ray because they haven't gotten to that stage of healing yet. It's a known fact and why in child abuse we get followup x-rays on many of our patients under the age of two.

Q. And looking here at State's Exhibit 27 that you can see on the screen above or to your left as a smaller screen, whatever is easier for you, can we see any kind of a fracture? Or what are we -- what

is the object? Do you recognize this object?

A. This looks like a part of a skull.

Q. That would be correct.

A. Okay.

Q. Do you see any fracture?

A. Yes, ma'am, I do.

Q. Can you point to it on the screen?

A. Yes, ma'am. So, these rough edges here are suture lines.

Q. Can you please hit it harder on the screen maybe?

A. *(Complies.)*

Q. There you go. You said they're --

A. Sorry. I'm in awe.

So, that red line is actually an outline of where the bone is supposed to be all one slightly curved surface. And instead you can see where the curve points out. Something has hit the bone so that that curve is pushed in the wrong direction and gone into the point where it can't bounce back anymore like a ping pong ball could. But instead it's pushed in to the point where the bone actually breaks. So, that red line is the break. And these rough jagged edges along the top side, that is actually part of the suture where it would attach

onto another bone and where the growth would happen. So, those are normal edges.

Q. And you had mentioned earlier the fracture on the left side, the left parietal bone; is that correct?

A. Yes.

Q. And is that what we're looking at in State's 27?

A. It's hard for me to tell out of context, but it looks very similar to what I saw on x-ray. So, I believe it to be that fracture.

Q. And it's very likely I've oriented it the wrong direction. Okay. Let's talk about what else, what other signs on Kamron that led you to believe that this was an impact. Head impact trauma; is that right?

A. Yes, ma'am.

Q. Okay. And would you call it a blunt impact injury?

A. Yes.

Q. Okay. And makes sense, but what does that mean to you or how should we understand that?

A. So, when we think of it as a blunt force impact, there are only two kinds of impacts we really talk about. So, there's blunt force impact and then

penetrating impact. So, if there was a knife wound or something, it would be penetrating. With blunt force, it just means something slams up against a hard surface very fast and very hard that leads to tissue damage. Because it hits so fast and so hard, the tissue can't bend like your ear would bend or your face would bend to diffuse the force but instead it gets damaged by the force.

Q. And that impact, could it be slamming? So, in this situation we're talking about the baby's head?

A. Yes, ma'am.

Q. Okay. Could that impact happen by slamming an object into the head and also slamming the head into an object?

A. Yes, either way.

Q. Okay. Is it possible that this could be violent shaking as well?

A. In addition to an impact?

Q. Okay. Would it be only consistent with this fracture if there was an impact in addition to shaking?

A. Yes. This indicates an impact, not shaking alone.

Q. Okay. This is not merely shaking?

A. Yes, that's correct.

Q. Okay. Let's talk about -- did you see any retinal hemorrhages on the baby?

A. I asked for an ophthalmology consult specifically to look for this because they're better at eyes than I am. And, so, yes. Ophthalmology reported there were numerous hemorrhages in the back of the retina in both eyes that went from where the nerve attaches the eye to the brain all the way out around the globe of the eye to the front where the black part of the retina stops and in all four quadrants of the retina. If you divided that circle into four quarters, they all had blood inside the layers and on top of the lawyers. And some of it was leaking into the jelly of the eye.

Q. And when you look at all these things, are these all clues that you sort of are able to put everything together to know what happened?

A. Yes, ma'am.

Q. Okay. What about -- what kind of impact then, figuratively speaking, does this have on the brain? Does the brain swell? How does it change the brain?

A. So, there are two things that happen. One is what we call the "primary damage." And, so, if

you picture a crash test dummy in a commercial and the car stops, okay, and then the dummy keeps moving forward, that's similar to the skull in the brain. The skull hits something. Or if it's a whiplash, the skull ends up on the chest, where the chin hits the chest. But the brain is still moving forward until it slams into the front of the skull. If there's a whiplash happening and it goes backwards or if the head hits something fast and hard, then the back of the skull stops and the brain continues to move backwards until it hits the back of the skull. So, you have the brain moving back and forth inside of the skull as well as moving back and forth in space. And, so, the veins that drain the blue blood out of the brain back to the heart can actually become stretched by this and they'll pop and they'll ping and they'll bleed. And that's what happened with Kamron's brain. That's the primary effect.

The secondary effect is that this is happening and it's stressing out the brain stem. And, so, oftentimes what happens is the babies are no longer able to breathe on their own. And, so, they'll be gasping for breath but not very effective, not good at getting their oxygen. And, so, the damage that comes to the brain is that of deprived

oxygen. And, so, it can't circulate the waste it needs. It can't get the energy it needs. And, so, the brain can then also swell, not just from the hitting but then from the second effect of oxygen deprivation.

Q. I want to ask you: When the impact occurred, whatever it was, whenever the blunt object struck the brain or the brain struck the blunt object, how immediate is the effect on the child?

A. It's instantaneous.

Q. And that effect would be what?

A. What happens -- and this is from confessions of people who have hurt children --

MR. HOCHGLAUBE: Judge, I object. This is nonresponsive.

THE COURT: Sustained.

MR. HOCHGLAUBE: Ask the jury to be instructed to disregard.

THE COURT: Jury is instructed to disregard the last comment made by the witness.

MR. HOCHGLAUBE: Move for a mistrial.

THE COURT: Overruled.

Q. (BY MS. ONCKEN) Okay. Based on all of your experience, your training in the field of child abuse pediatrics, can you tell the jury what the physical

effect of that brain injury would be on the infant?

A. It's an immediate altered level of consciousness --

THE COURT: Can you speak up for me, please?

THE WITNESS: I do apologize.

A. It's an immediate altered level of consciousness. So, the children are immediately no longer alert or awake. They are often limp, floppy, difficult to arouse; and very often they are un-arousable or knocked out.

Q. *(BY MS. ONCKEN)* Okay. And that's, I guess, what's going to be my next question. They would appear knocked out?

A. Yes.

Q. Is it possible for Kamron to have sustained the injuries that you saw and for it not to manifest itself for several hours or days?

A. No, that is not possible.

Q. Okay. And based on where you saw the skull fracture, which side of the head would the injury have happened to?

A. The left side. *(Indicating.)*

Q. And you were telling the jury about your example with the crash test dummy and whiplash. Is

this a whiplash kind of injury or a whiplash motion that's happening?

A. Yes, that is what we believe to be true.

Q. Okay. Now, let's talk about dropping an infant. Have you seen on few or many occasions, you know, a child come in that has been dropped or fell from someone's arms?

A. Many.

Q. Is this type of injury, the whiplash motion, the slamming effect, is that consistent with a baby being dropped?

A. No.

Q. Why is that?

A. When you see a baby dropped, it's what we call a "linear impact." It's something that comes from up high and goes down low, and it's stopped by whatever it hits. But the brain only stops that one time. So, we don't have that bouncing back and forth and back and forth. And, so, we can have what we would called "focal," focused injury, at the place where it hit. Okay? And, so, that would be expected. You can have a crack in the skull, a fracture. You can have blood where it hit. You can even have a little bit of blood, where you saw my hand went like this when I put it down, a little bit

of bruising on the opposite side from the impact. But you don't have that diffuse bleeding and you don't have the secondary effect of respiratory arrest where the breathing gets compromised.

Q. The force that would have had to have been used to cause this injury that killed Kamron, is this force that occurs in the normal course of caring for a child?

A. No.

Q. Okay. And is this excessive force?

A. Yes.

Q. Is this abusive force?

MR. HOCHGLAUBE: Judge, I object to leading questions.

THE COURT: Sustained.

Q. *(BY MS. ONCKEN)* Is there any chance that this was just something that happened spontaneously?

MR. HOCHGLAUBE: Again, Judge, I object to this being a leading question.

THE COURT: Sustained as to the form of the question.

Q. *(BY MS. ONCKEN)* Could Kamron have sustained the injuries that he did without being in some way slammed against an object or an object slammed into him?

A. No. We look for underlying medical conditions that would pre-dispose children to a major injury from a minor trauma. We did not find any such condition in Kamron. These injuries would not have happened of their own accord.

Q. Based on your training and being Kamron's doctor, was this a SIDS death, just a Sudden Infant Death Syndrome case?

A. No. Those cases are unexpected. This child had injuries that led to his death. There's an explanation.

Q. I want to talk about possible rib fractures or rib fractures that Kamron had. You did have a chance to review State's Exhibit Number 1, the autopsy, correct?

A. Yes, I did skim it.

Q. And did you look at the anthropology report?

A. Yes, I did.

Q. And were you able to look at the description of Kamron's ribs?

A. Yes, ma'am.

Q. And can you tell the jury whether or not he had rib fractures?

A. Yes, he had rib fractures.

Q. Okay. How many does it say?

A. I need to count them again. It looks as though four different ribs were fractured.

Q. Okay. And can you tell either from what you observed at Texas Children's or from reviewing the autopsy if those fractures were anterior or posterior?

A. They were posterior.

Q. And --

A. And there were some that were separating at the breastbone.

Q. And what does that mean, separating at the breastbone?

A. It means that the fracture of the sternal end plate, meaning that -- we don't ever see this on x-ray. This is something that the anthropologist --

MR. HOCHGLAUBE: Object to nonresponsive.

THE COURT: Sustained.

MR. HOCHGLAUBE: Ask the jury be instructed to disregard.

THE COURT: Jury's instructed to disregard the last comment.

Q. *(BY MS. ONCKEN)* Okay.

A. I'm sorry.

Q. Can you see this separation from the breastbone on your x-rays?

A. No. They take the bones out. They look at the bone out of the baby.

Q. Okay. And have you ever worked with a -- well, specifically the anthropologist on this case, have you worked with her before?

A. Yes. I know her.

Q. Okay. Do y'all do case studies together?

A. Yes, from time to time we do.

Q. Okay. So, would that have been able to be observed prior to an autopsy?

A. No.

Q. Okay. Tell the jury and me: Posterior versus anterior, what does that mean in basic terms?

A. So, a posterior rib fracture is in the back. An anterior fracture is on the front.

Q. I want to ask you about giving C.P.R. If someone gave C.P.R. to the baby, to baby Kamron, could that have caused or is it likely to cause the posterior fractures on his back?

A. No. No. The literature that we know of does not support any type of C.P.R. leading to rib fractures in your back.

Q. Now, you had also said, other than the

posterior fractures, also the separation from the sternum?

A. Yes.

Q. Is that what you said?

A. Uh-huh.

Q. Okay. And would that be more to the front or anterior?

A. Yes. That's actually on your breastbone. Those are things that clinically, meaning doctors who treat the living, we simply don't encounter those with any kind of frequency. They would be entirely rare for us to actually find clinically in a live person.

Q. Okay. And, so, what does that mean to you in terms of accidental C.P.R. damage versus child abuse?

A. It means that it's very difficult for me to comment on them from a child abuse standpoint because we don't see them in those who survive. And the type of testing that is undergone with an autopsy is very different. So, I can't really compare them.

Q. Okay. Let's talk a little bit more about the brain injury. We talked about retinal hemorrhages and optic nerve damage, correct?

A. Yes, ma'am.

Q. Okay. Any other damage to the brain?

A. He had -- his whole brain was swollen. And on top of the brain there's a thin layer called the "pia membrane" and there's another thin layer that looks like a spiderweb. It's called the "arachnoid membrane" for that reason. He had global edema. So, the whole brain was just swollen and sick and dying.

And then there was bleeding between that lining, the pia and under the arachnoid, subarachnoid bleeding. And that's indicative also of a fast, sharp blow where things just sort of pop and you get some mixture of blood and spinal fluid. So, he had those injuries as well inside of his head.

Q. And did he also -- you said he had this subarachnoid. Did he also have subdural hematomas?

A. Yes. He had large subdural hemorrhages which are on top of the arachnoid membrane. And underneath the dura, which is a lining inside the skull -- I sort of liken it to what lines an eggshell -- so there was blood accumulating there as well.

Q. And, again, this is all consistent with a blunt impact trauma?

A. And I think a whiplash acceleration deceleration as well.

Q. We had talked about your ability -- you and I did -- to see Kamron's face or his mouth area while he was in the hospital. Tell the jury about that.

A. So, when I saw Kamron, he had a great deal of tape over his mouth and the top of his lip to stabilize the breathing tube that was going in his mouth, down his windpipe, into his lungs to support the breathing machine. So, I was unable to see the injuries that were previously described by E.M.S. and L.B.J. because of the taping.

Q. And were you able to see, through me, this photograph, State's Exhibit Number 35, taken at L.B.J. Hospital?

A. Yes, ma'am.

Q. Okay. And does this show more than you were able to see in your hospital?

A. Yes, ma'am.

Q. And tell us what you see.

A. So, what I see here is a small abrasion on the lower lip. And then on the inside of his upper lip where it's wet -- we call that the "mucosa" because it's wet skin -- there looks like a contusion which is a fancy word for saying there's a scrape and a bruise existing in the same place. And then it's tough for me to see it, but I believe based on the

description that some of that discoloration at the gum is also that bruise continuing into his mouth.

Q. And a contusion like this is caused from what kind of force?

A. Again, that blunt force trauma.

Q. From impact?

A. Yes, ma'am.

Q. Now, if Kamron was cut with a sharp object, would that have caused all of this damage to his mouth -- in other words, the bruising aspect of it?

A. No, that's not consistent with a sharp object.

Q. And I'll be even more specific, like cut glass or a broken glass bottle?

A. That would not be what I would -- that's not consistent with the injury I see in front of me.

Q. And why is that?

A. If you have a sharp edge, the tissue damage is going to be separation of the tissue. So, you would have a cut. You would have some kind of, you know, a laceration, something that needs the edges pulled together with a bandaid or maybe even stitches. I don't -- I see nothing like that here.

Q. While in the hospital, was Kamron given fluids?

A. Oh, yes.

Q. Intravenously?

A. Yes, ma'am.

Q. Would that have caused him to be puffy looking?

A. Yes.

Q. Okay. What about -- we always hear in little infants how their brain hasn't fully -- the skull hasn't fully formed, the soft spot, so to speak?

A. Yes.

Q. Would an infant at three months old still have that soft spot?

A. Yes. He would have both of them, the front and the back, still wide open.

Q. Okay. And how, if at all, would that have affected Kamron and his injuries?

A. It would have actually helped him survive them longer because -- we even call them, like, a pop up valve. The pressure in an adult like you or I, if we had this kind of damage, it would grow and grow. But our skull is a box, so the pressure has nowhere to go but down and out. So, down and compress the spinal cord.

In a baby, the pressure can go up and

out, which is exactly what happened with Kamron. When you look at his x-ray, his sutures, all those bones that are joined together with a membrane to allow for growth, were split. And then his soft spot was full and firm because the pressure was also going up to avoid compressing his brain stem.

Q. Externally were you able to find or feel anything on external examination of Kamron's head that would be consistent with some of the internal injuries we're seeing to his skull?

A. Yes.

Q. Okay.

A. Over the area where there was a fracture, I actually felt a bogginess of the scalp. So, we would call that a "scalp hematoma," blood collecting within the scalp. I thought I could actually feel the step-off. So --

THE REPORTER: Excuse me?

Q. *(BY MS. ONCKEN)* The what?

A. Step -- S-T-E-P hyphen O-F-F. The step-off. It's a medical phrase meaning I feel where those bones are separated. This may be affected by I knew where the fracture was, but I could also feel it.

MR. HOCHGLAUBE: I'm sorry. I can't

hear you.

A. I'm sorry. I thought I could feel that fracture underneath the blood collection in his scalp. Also his anterior fontanel, the front soft spot, was firm and full. So, instead of looking flat and having a little heartbeat, when we saw the baby, it actually looked like a dome because of the pressure.

Q. *(BY MS. ONCKEN)* Would that be the swelling caused that?

A. Yes, the inside swelling is pushing up.

Q. So, I'm understanding from the last comment that you made that you actually felt on the exterior something consistent with -- and now I'm talking about the left parietal fracture -- you felt something that was kind of squishy feeling almost?

A. Yes. Like, we call it the "bag of water sensation."

Q. The retinal hemorrhages that Kamron had, could that in any way be caused by C.P.R.?

A. Not -- not his degree, no, ma'am.

Q. Is it possible that any medical intervention done indirectly by your hospital, by L.B.J., by anybody at the scene, could have caused injuries that you see to baby Kamron?

A. I have a hard time thinking of anything that could have been done incorrectly that would have led to the bleeding in the head, the bleeding in the eyes, the broken skull. I don't believe so. Unless somebody got into a car accident with him in the ambulance and he was not restrained maybe.

Q. It's not -- doesn't make sense?

A. No.

Q. Do you know of a medication named C-Phen, P-H-E-N?

A. That's a cough medicine.

Q. Okay. And is that something that would be prescribed to an infant for a cough or a cold?

A. Yeah. Yes.

Q. And looking at State's Exhibit 66, a prescription for a sea soft nasal mist?

A. That's saline water like you use in contact drops. Put it up there. It softens up the boogers, helps parents suck them out with the bulb suction.

Q. Okay. Again, anything about either of these two medications that would any way cause the blunt trauma that you saw to Kamron?

A. No, ma'am.

Q. What caused his death?

A. His brain injury.

Q. At the end of -- well, Kamron died in your hospital, right?

A. Yes, he did.

Q. At the end of his life, was he in any way able to breathe on his own without the aid of machines?

A. No, ma'am, he was not.

Q. Okay. So, I guess the machines at some point were turned off?

A. Yes.

Q. Okay. And is it right to say that the only reason he stayed alive was the continued aid and helping him breathe and pump oxygen and whatnot?

A. Yes, ma'am.

Q. Okay. I'm going to show you State's Exhibit 26 from the autopsy. And we're looking at the right leg. Do you recognize the little dots and whatnot that we see?

A. Yes, ma'am.

Q. Okay. And what are those consistent with?

A. So, what that looks like to me, given its position on the lower leg and then this circular impression underneath it, this looks like an interosseous line was placed. And, so, what you do when a child is crashing, you get the strongest

person in the room. They have a needle with a hole in it and in the hole is full of another needle and then that second needle is attached to a round plunger. And you push it as fast and hard as you can into the bone of their shin, into the bone marrow cavity, and you give them as much fluid as you can as fast as you can. And if you do it right, you make a hole like that and it goes all the way through the bone and then you're giving them the medicine they need in the best way you can.

Q. Just so I'm clear, you -- and in no way can you say that you know what object was used to strike this child with or that he was struck against, correct?

A. That's correct. I don't know.

Q. But when we hear the term "blunt object," that's something against which there's no resistance; is that right? Or --

A. It means usually something that's larger than the thing that's hitting it. So, something that doesn't have any pointing ends that would protrude and make something that penetrates into the child's body. Usually something large and fairly flat.

Q. Versus, like you said earlier, a knife that would be some sort of a penetrating wound?

A. Right.

Q. Okay. And you had also said, am I correct, that if shaking -- shaking with someone's hands -- had occurred, there would also have to be striking against a blunt object in addition to that?

A. Yes, ma'am.

Q. Okay.

MS. ONCKEN: Pass the witness.

CROSS-EXAMINATION

Q. *(BY MR. HOCHGLAUBE)* Doctor, you've testified before for the State, have you not?

A. Yes.

Q. How many times?

A. I don't know. Probably -- this is my 48th subpoena this year. I've probably testified a dozen times.

Q. So, you testify pretty regularly for them; is that right?

A. Well, for the State and sometimes in family court as well. The defense asks me, but they don't like what I have to say a lot of the times.

Q. Why is it that they don't like you?

A. Because I give them my honest medical opinion. And more often than not it's that I don't agree with the history provided by their defendant.

Q. So, you work at the Children's Assessment Center as well as at the Baylor College of Medicine; is that right?

A. Yes, sir, and Texas Children's Hospital.

Q. Okay. And the Children's Assessment Center is basically a place where law enforcement and the D.A.'s Office and proper therapy sort of all combines to help kids, right?

A. Yes, sir.

Q. And you would agree with me you sort of play an integral role in a number of law enforcement investigations, have you not?

A. I don't know how integral; but I'm certainly part of investigations, yes, sir.

Q. Have you ever testified as a defense expert?

A. No. I've been consulted, and I've testified by phone to a judge. I've never come to a witness stand like this.

Q. Okay. And you can't count the number of times you've testified for the State; is that fair to say?

A. Not accurately, no. It would be in the tens. Probably 40 or 50.

Q. It sounds as if you're saying that in your

opinion Kamron was both shaken and that his head collided with some sort of object, we don't know what; is that right?

A. It's mostly right. The shaking I'm using as a term because that's what the other attorney was using. What we would say would be a "whiplash motion." So, acceleration deceleration. It could be one time very hard or more than one time. I can't say. That's why we have gone away from "shaken baby" as a term.

Q. So, if I told you that Kamron died as a result of someone shaking him with his -- as a result of the person shaking Kamron with that person's hands; is that true or is that not true?

A. That is likely partially true. I think there's more to it than that.

Q. So, because it -- as I understood, you said that he died as a result of brain swelling, right?

A. Ultimately, yes.

Q. And is it not your opinion that that brain swelling was caused by, I guess, the blunt force impact?

A. It was a combination of factors. It's not so linear. It's both what led to the bleeding also does the same thing in the levels of the brain

tissue. And, so, that brain tissue is injured in the same way the blood vessels are injured; and then there's secondary injury from the lack of oxygen.

Q. Let me ask you the question in a different way. Is it possible -- is there a reasonable possibility that shaking actually had nothing to do with Kamron's death and that it was entirely based on blunt force trauma?

A. No, I don't believe that could be so.

Q. Okay. And why is that?

A. Because what we have is global injury. So, the whole brain has the injury. The bleeding is on both sides. The bleeding is present on both the subarachnoid and subdural layers around the brain and also within the eyes to a degree that's just not consistent with an impact alone.

Q. Okay.

A. So, I can't say how many shakes; but I believe there was more than one component to his injury.

Q. Can you say how many times his head was impacted?

A. There's one fracture. That doesn't mean there was one impact, but I would be inclined to say that it would make sense. So, at least one. Maybe

more.

Q. So, it could have been as little as one impact; is that right?

A. Yes, in addition to something else.

Q. And can you give us a duration for the amount of time he would have had to have been shaken?

A. No, we don't know.

Q. But it could have happened in a matter of a couple seconds?

A. Absolutely.

Q. You talked about his retinas, there being hemorrhaging which basically means that there's blood. Sometimes, if I'm not mistaken, sometimes there's so much blood that it actually detaches the retinas; is that right?

A. Yes. That would be the most extreme end of the spectrum.

Q. Okay. That did not happen in this case?

A. No. It was just all over, but it hadn't lifted.

Q. Right. So, as I understand it then, it sounds like there's one impact which we saw in that sort of picture of the skull, right?

A. Yes, sir.

Q. And we believe that that caused the

injury -- that crack anyway?

A. Yes.

Q. All right. The State made mention of there being other fractures in the skull. Did you hear the prosecutor talk about that?

A. I'm unaware of any other fractures in the skull. I'm aware of only the left parietal fracture here. There were separated sutures.

Q. I see. So, as far as you're concerned, there was only one fracture?

A. Well, as far as I know.

Q. Uh-huh. But you've reviewed the autopsy report, correct?

A. I skimmed the ribs. I did not read it from cover to cover.

Q. I see. So, you're not really sure how many fractures there were?

A. I know of one.

Q. And, so, if there were more than one fracture, then basically you're talking to us without really a complete knowledge of all of his injuries; is that right?

A. Right, because I don't do the autopsy.

Q. You talked about how a child that suffers that sort of injury would effectively be knocked out;

is that right?

A. Yes.

Q. And they would be knocked out, you said, sort of instantaneously, correct?

A. Yes, an altered level of consciousness.

Q. Okay. And you would agree with me that babies as young as Kamron, their consciousness is not quite the same as it is with an adult, right?

A. That's true.

Q. And as a result, if a baby's eyes are open, even if it's not conscious, it may appear to be conscious because lots of times babies aren't really doing anything, right?

A. That's not entirely accurate because there's also a component of muscle tone, like moving or being limp and floppy like a noodle.

Q. Sure. I guess what I'm trying to get at is that what would be readily apparent to an adult, if it was an adult injury, right, it may not appear as obvious if it was an injury to an infant; is that fair to say?

A. I don't think I can completely agree with you on that.

Q. Okay. You're certainly aware of head injuries that -- even though this is not your

specialty, you're a licensed physician, correct?

A. Yes.

Q. And you're certainly aware of head injuries that happen to adults. They happen to adults and children both, right?

A. I'm aware they happen. You're venturing out of my level of familiarity. I don't do adult stuff very much.

Q. Believe me, I -- don't come talk to me about wills. I don't know anything about that. But the -- what I guess I'm coming to is that, you know, for instance, with football players, we see them knocked out on the field and then they come back. They come to. They may be in a sort of altered state of consciousness, and a lot of times they don't remember exactly what happened or how they ended up that way, right?

A. Yes.

Q. And my question to you is: Is not a similar -- is it not possible for that to happen with an infant? I'm not specifying with Kamron right now. I'm just saying: Is it possible for that to happen with an infant?

A. So, you're referring to a concussion in the field happening to an infant?

Q. No. I guess my question is: Is it possible for an infant to suffer head trauma, to lose consciousness, but then to regain it?

A. I'm not familiar with data that would state that they come back to a regular baseline after suffering a brain injury.

Q. Now, what you said was that the breathing gets affected because ultimately there's so much swelling that it impacts the brain stem, right?

A. Yes, as well as primary trauma to the brain stem.

Q. Right. And basically it's the lower part of the brain that attaches onto the spinal cord, that's what is the part of the brain that's responsible for sort of our basic bodily functions, right?

A. Yes.

Q. Like breathing, like heartbeat, like things we don't even think about, correct?

A. Yes.

Q. And basically for a baby, there's going to be some amount of time between the impact and between when the swelling from that impact ultimately affects the brain stem; is that fair to say?

A. Yes.

Q. Okay. And, so, although the brain -- the actual initial impact may cause some sort of temporary unconsciousness, right, if the swelling doesn't reach the brain stem, right, then it's possible that that child might continue to breathe for a while. Is that right?

A. Oh, yeah. He could continue to breathe with a big swollen brain, just not very well.

Q. Okay. But it's possible that it wouldn't necessarily impact their breathing right immediately because the swelling wouldn't have affected the brain stem, right?

A. There's two schools of thought on that because you also have that whiplash motion doing that primary injury, that stretching and hurting the brain tissue itself in that part of the brain. So, many people would argue that you do have an initial effect on breathing. Kind of like getting your bell rung, that it transits -- it trans -- it affects both the brain as well as the brain stem with that kind of initial bell ringing. So, I can't speak to that any more clearly. It's possible, but not every -- not everybody would agree.

Q. You said that the fractures to the ribs, that those would not be caused by medical treatment.

Is that --

A. The posterior rib fractures.

Q. Posterior.

A. The ones you could see.

Q. But -- and that's because when a trained medical professional is doing C.P.R. on an infant, they know to be careful about how they apply pressure, right?

A. That, and the flexibility of the chest.

Q. Okay. And I guess my point is is that if a person who didn't really know what they were doing, right, was trying to perform C.P.R., was trying to, you know, basically get the heart beating and didn't really understand how best to do it other than what they'd seen on TV, right --

A. Uh-huh.

Q. -- it's conceivable that person could have hurt the kid, is it not?

A. Well, sure. It depends on the manner they administered the C.P.R.

Q. Right.

A. If it was flat on the ground or say they picked him up and squeezed him.

Q. Right. And it sounded like the cracks to the sternum, that that actually -- you can't comment

on that because you don't have any experience with that.

A. Yeah, we just --

Q. Except on --

A. We don't see that.

Q. Except in autopsies. Okay. So, you can't refute the possibility that that could have been from C.P.R.?

A. I can't.

Q. Okay. I heard your answer to the retinal hemorrhages and the connection between that and C.P.R. And your answer, I think, was that it couldn't -- the C.P.R. could not have caused the retinal hemorrhages to the degree that you saw; is that right?

A. That is correct.

Q. But you would agree with me that C.P.R. can cause retinal hemorrhaging?

A. There's debate about that. And essentially physician papers have said there may be a few small retinal hemorrhages associated with C.P.R., but it's not --

THE REPORTER: Can you please slow down?

THE WITNESS: I'm sorry.

A. There may be a few small retinal hemorrhages associated with C.P.R., but it's not been something that's been confirmed in large study. So, if one person reports it one time, you have to say there's a possibility it could happen again.

Q. *(BY MR. HOCHGLAUBE)* And I think you've already conceded this, but just to sort of get us on the right topic, you basically say you don't know what actually happened to Kamron; is that right?

A. I wasn't there. I don't know.

Q. You don't know whether something struck Kamron or whether Kamron struck something else?

A. Correct.

Q. And certainly you don't know what that thing was that must have apparently struck Kamron's head, right?

A. Right.

Q. And you don't know basically the circumstance of how his head came into contact with that?

A. I do not.

Q. You don't know who else was present at the time?

A. I have a list, but I don't know if it's true or not.

Q. Well, I'm going based on what you actually know from -- not just from your medical records, but based on the fact that you're not an eyewitness to anything.

A. Oh, heavens no. No, sir.

Q. You saw nothing, right? And based on just medical information -- and I'm not talking about witness information that you may have read or heard or want to relate to in terms of -- you know what hearsay is, right?

A. Uh-huh.

Q. With sort of setting hearsay aside, going just based on your diagnostics, you certainly can't say how that head injury actually took place, right?

A. No, not specific to Kamron. I have an idea of the mechanism, but I wasn't there.

Q. So, you certainly can't state the --

MR. HOCHGLAUBE: Can I have just one moment, Judge?

THE COURT: Yes.

(Pause)

Q. *(BY MR. HOCHGLAUBE)* With the blunt force trauma and the collision that you see, sort of the internal damage from inside the head, would there not be some sort of damage to the skin at the point of

contact?

A. Not necessarily, no.

Q. Is it possible that there would be?

A. It's possible there would be. It's possible there wouldn't be.

Q. Would you -- are you aware of anybody making any type of investigation to see if there was any type of injury on the outside that would have been consistent with that type of impact?

A. I don't think I understand that question.

Q. Have you seen the autopsy photos?

A. No, just that skull and a rib.

MR. HOCHGLAUBE: If I may just have a moment, Judge?

MS. ONCKEN: The group is right up there, flipped over.

A. I think I actually might have reviewed those. I just didn't remember. They look sort of familiar now. I can't recall every one.

MR. HOCHGLAUBE: May I approach the witness, Judge?

THE COURT: Yes, sir.

Q. *(BY MR. HOCHGLAUBE)* I want to show you what's marked as State's Exhibit 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, and 7.

A. Uh-huh.

Q. Those are autopsy photos of Kamron's head, right?

A. Yes.

Q. And I don't know if they cover every square inch of his head; but they cover a large part of it, do they not?

A. It looks like the face and at least the back --

THE COURT: I'm sorry. I can't hear any of what you just said.

THE WITNESS: I do beg your pardon.

A. Yes, it looks like his face and at least part of the back of his head. Yes, sir.

Q. *(BY MR. HOCHGLAUBE)* Would you agree with me that by comparison to the swelling you describe happening internally, there is no such bruising on the outside of his head that shows anywhere near the same amount of damage?

A. In the photos there doesn't, but I felt that big hematoma on the skull when I just felt him.

Q. Exactly. And that's my point. Is that the hematoma -- you said you felt the hematoma --

A. On his left.

Q. On his left. Basically where you saw the

fracture --

A. Yeah.

Q. -- in the skull that we saw?

A. Yes, sir.

Q. Okay. Do you see that same hematoma in any of those pictures?

A. Let's see. I can go through and look. This is the left. It's not up high enough. This is too far forward. I think these are part of where his scalp was shaved. So, I couldn't have seen this when I examined him.

Q. But that's fine.

A. I can't see. I don't see any good pictures of that area where I know I felt it. I'm sorry.

Q. In your testimony, you sort of said that it's not possible that Kamron fell and that that caused the injury the way you saw it. The medical results of the injury you felt were inconsistent with him being dropped or him having fallen on the ground; is that right?

A. Yes. Yes, I said that.

Q. Okay. And yet your testimony is also that this injury and the entirety of his cause of death could have happened within a couple seconds of, I guess, for lack of a better word, shaking and impact;

is that right?

A. Yes. A person can shake a baby more than once inside of a second.

Q. Okay. So, if he was falling, say, and someone reached out to try to grab him before he could actually fall, right -- and I'm not even -- I'm just throwing this out as a hypothetical. I'm not suggesting that this happened in any way. But just if that somehow altered the baby's course and jarred the baby as he was falling, then we're saying that this -- that could conceivably explain his injuries?

A. No. I don't think that would explain his injury. I would expect where he was grabbed to be broken perhaps, but that still doesn't explain them for me.

MR. HOCHGLAUBE: I pass the witness, Judge.

MS. ONCKEN: Just very briefly, your Honor.

REDIRECT EXAMINATION

Q. (BY MS. ONCKEN) Just to clarify, there are bruises to the baby's head in the autopsy pictures, correct?

A. Oh, yes, ma'am. There are bruises.

Q. Okay. And is it likely that bad C.P.R. or

good C.P.R. could have caused his posterior back rib fractures?

A. No. No. Posteriorly we just don't see those associated with C.P.R. because it's fixed. It means that the rib was squashed up against the spinal column and broken that way.

Q. Counsel had asked you about a delay between the impact and the brain swelling, but you had told the jury that the effect on the baby would have been instantaneous.

A. Yes.

Q. Okay. Can you resolve those two ideas?

A. Yeah. So, we have two types of injury. We have that primary injury. So, the whiplash and the shaking -- or the whiplash and the impact, okay, is the initial injury. So, it's when the brain is moving back and forth, that crash test dummy, that analogy that I gave to you, that hurts the cells inside the brain. And, so, they're moving back and forth as well and they can't do that. They're different thicknesses inside the brain and they move at different speeds and they separate and they break and that's bad. And, so, you have primary brain damage happening when the injury is happening. And, so, that kid is altered immediately.

The secondary damage is from the swelling after that injury and also the respiratory compromise, that breathing change that happens because of the pressure on the brain stem and what's thought to be the primary injury at the brain stem, that stretching that's going all the way down to the brain stem. So, it's primary and secondary that's happening and that's why it can be instantaneous because you can't discount the primary injury.

Q. Okay. Thank you. And also probably due to my bad questioning, you had looked at the autopsy. If you would pick up State's Exhibit Number 1 and look at Page 4, and on Page 4 under A, blunt trauma of the head -- are you there, or am I making sense? And it will say up on the left Number 4.

A. I don't know if that's Page 4. Of the anthropology report?

Q. No. No. No. Just the regular autopsy. Sorry. All right.

A. Thank you. Okay. Blunt trauma of the head.

Q. Okay. So, one, two, third paragraph down, describing the different fractures to the skull. Now, you told us that you saw one to the left parietal bone, the left side of the head?

A. Yes.

Q. Okay. Now, do they also describe in the second sentence a second 1-inch linear fracture in the left parietal bone?

A. Yes.

Q. Okay. Is it possible that some fractures could only be viewed upon autopsy?

A. Yes, that happens.

Q. And then the next sentence or so, it mentions a third fracture to the right occipital bone.

A. I didn't know about that one either.

Q. And that's my fault. I know we talked a while ago --

A. I'm sorry.

Q. -- and you've worked since then. So, in fact, there are injuries on both sides of the head to the skull?

A. Yeah. Yeah.

Q. And this -- which one is the occipital bone? Can you point to it?

A. If you take your hand and cup it on the back of your head under where a baseball cap would be, that's your occipital bone.

Q. So, would it be accurate that that would

have to be at least two impacts to his head?

A. Yes, ma'am.

Q. Okay.

MS. ONCKEN: I'll pass the witness.

MR. HOCHGLAUBE: Just one moment, Judge.

(Pause.)

RECROSS-EXAMINATION

Q. *(BY MR. HOCHGLAUBE)* Even with the two impacts, as you say, basically sort of being reinformed of what the autopsy says, you had said before that you thought that there could have been just one impact. Now you don't think that there could be one impact?

A. No. Now knowing there's an occipital fracture, that wouldn't make sense.

Q. So, now you think that there could be two impacts.

A. That would be a sign of a second impact, yes, sir.

Q. And even then, two impacts could happen in sort of fast sequence, within a matter of seconds; is that right?

A. Yes, sir.

Q. Okay.

MR. HOCHGLAUBE: I pass the witness.

MS. ONCKEN: Nothing further from the State, your Honor.

THE COURT: Thank you, Doctor. You can step down. Just make sure you leave everything that was admitted up there.

All right. Members of the jury, we're going to go ahead and break. It's my understanding that's what y'all wanted to do, correct?

All right. So, I'll ask you to come back tomorrow morning at 10:00 a.m. Don't discuss the case amongst yourselves. Don't discuss it with anybody else. And make sure you keep track of your badges. Keep them on until you get to your car. Don't do any independent investigation on your own or consult any outside sources.

I appreciate your flexibility, your hard work, your attention. And we will see you in the morning at 10:00 a.m. Starting promptly at 10:15. We'll probably work until, I would say, at least 5:00, maybe 5:15, or something like that tomorrow.

So, all right. Please retire the jury.

(Jury leaves courtroom)