

Dr Marnerides Cross Examination

(In the presence of the jury)

MR MYERS: Dr Marnerides, I'm turning to [Baby C] next, count 3 on our indictment. We're going to go through your opinions concerning this case. I would like to start with your opinion as set out originally in your report of 23 January 2019.

We know that -- we'll come to your opinion now.

But on 23 January 2019, I am going to read your opinion paragraphs A and B, in which you said, page 14 of 15:

"Having reviewed the materials provided to me, I have not identified any suspicious findings or any morphological or clinical evidence that would justify a view that the death of this baby may have been due to unnatural causes."

That's how you start on your opinion, isn't it?

A. That's correct.

Q. You go on to say:

"Having reviewed the materials provided to me and on the basis of what I have previously discussed herein, it is my opinion the most likely cause of [Baby C]'s sudden collapse and subsequent death would be the histologically identified acute pneumonia with acute lung injury."

That was where you concluded at that point, wasn't it?

A. Yes (inaudible) continued.

Q. "Acute pneumonia with acute lung injury would be in keeping with the clinical assessments and opinions..."

And you give the names of the clinicians, that's Dr Evans, and (inaudible) refer to a clinical (inaudible) Platt:

"... namely that [Baby C]'s death might have been due to a natural cause."

And you form your conclusion that this cause of death was acute pneumonia with acute lung injury and intrauterine growth restriction and prematurity.

A. That's the contributory factor, yes.

Q. Contributing. That remains your opinion, I'm going to suggest, until we come to your report on 4 September 2022, which is your last report in this matter.

A. Yes.

Q. And -- 3 years later, that is -- in this report your view was, and I'm looking at your opinion:

"This could be explained as death due to..."

I'm looking at the underlying section in part B:

"... unnatural causes, having been subjected to excessive and apparently deliberate administration of air into his stomach and intestines via the NGT, against a background of acute pneumonia and with acute lung injury, intrauterine growth restriction and prematurity."

That's where we get to 3 years after the original report.

A. I would be obliged if you read the whole thing rather than parts of the (inaudible).

Q. We've been to parts before during your evidence originally but I'll go through it with as much detail as you require. You say:

"In my opinion, the constellation of the clinical, radiological and morphological findings would not support my previously expressed view that [Baby C] died due to natural causes."

You gave the opinion that the constellation of those clinical, radiological and morphological findings would on the contrary, strongly indicate that [Baby C] died due to unnatural causes. And you restate the mechanism of excessive air down the NGT against a background of acute pneumonia with acute lung injury, intrauterine growth restriction and prematurity and so you say the cause of death is:

"Respiratory and cardiac arrest, gastric and intestinal over-distension and [you say] excessive injection/infusion of air into the GI tract via the NGT."

And then you also have:

"Secondary: acute pneumonia with acute lung injury, intrauterine growth restriction and prematurity."

A. May I respond now?

Q. Well, first of all, do you agree that's the change we have in the opinions?

A. On the basis of the new evidence.

Q. Well, I'm going to ask you about that. That comes in the light of, first of all, the opinions of clinicians at the joint meeting; is that correct?

A. Correct.

Q. And in particular, Dewi Evans and Sandie Bohin, who favour that cause, don't they? Do you recall that?

A. And Dr Hall.

Q. Yes. There's a different explanation from him in fact.

A. Yes, and I discuss these explanations in my report.

Q. Let me just go through what I am looking at as additional factors. They relied, didn't they, upon an abdominal X-ray on 12 June -- taken on 12 June 2015; do you agree?

A. They gave evidence or they're giving evidence, I don't know. You can ask them on what they rely.

Q. Okay. We'll come back to that then. I'm going to come back to any additional point you want to raise, Dr Marnerides, but can I just ask you this: the post-mortem evidence does not, in fact, provide evidence that shows that there was air in the abdomen sufficient to cause collapse at 23.15 on 13 June? The post-mortem evidence does not establish that, does it, the snapshot?

A. So the first question I need to answer is -- I don't have a recollection of whether there was abdominal distension of those organs observed at post-mortem. I need to go back to the reports.

(Pause)

Q. It may assist you if you look in your report of 4 September 2022, paragraph 6.

A. So I'm reading paragraph 5 in my last report, what Dr Kokai observed:

"The stomach: all loops of the bowel and mesentery show normal rotation pattern apart from descending colon, which crosses the midline into the right lower abdominal cavity and connects to the sigmoid colon, which is in normal position. The serosal cover is thin, shiny and translucent. The stomach contains a large amount of air and some bile-stained secretions."

Point 6 --

Q. Hang on, could you finish that sentence, please?

A. "The remaining bowel is empty. The colon contains meconium."

6:

"The digital photographs we have identified, PCSN3278, from the post-mortem examination of [Baby C] illustrates a distended stomach and distended bowel loops. The distended bowel loops occupy the left half of the abdominal cavity and is represented in the photographs and the bowel loops only extend crossing the midline towards the right-hand side to a mild degree."

You heard yesterday, I have illustrated, when I discussed the case, what my view was that those photographs were illustrating. I took the view that the air that was visible at post-mortem was in the stomach and the small bowel and there couldn't have been an explanation for the colon, the large bowel, to be distended. I have went through the two possibilities yesterday. So there was evidence of air from the post-mortem examination.

Q. Now, the question I asked, Dr Marnerides, was: the post-mortem, the pathology, does not provide evidence that demonstrates air in the abdomen was sufficient to cause collapse at 23.15 on 13 June. The pathology does not do that, does it?

A. It needs to be taken into -- so there is air and it needs to be correlated with the clinical course to answer the question on whether that air would account for the collapse. You're asking me -- you're breaking down something in a strict way, which I understand that I might have invited you to do it, saying I'm a pathologist, but it's like asking an expert in physics explaining a mechanism without using maths. It's simply not doable --

Q. But again --

A. -- because I'm not an expert in maths.

Q. What I'm anxious to identify is where the pathology goes and then where other materials comes in to shape the conclusion you reach.

A. The pathologist here says that there was extensive distension of the stomach and the small bowel. That's what I -- ended up being my opinion in terms of what the pathology can say.

Q. Is that different from what Dr Kokai says where he said, and it's in the agreed the facts:

"The stomach contains large amounts of air and some bile-stained secretions. The remaining bowel is empty"?

He makes no reference to air on the post-mortem in the remaining bowel as it happens.

A. It's different because the photographs show distended bowel loops.

Q. In the small intestine.

A. In my opinion it is the small intestine, yes.

Q. In the small? All right.

A. I consider whether -- and I explained yesterday whether it could be the large intestine.

Q. Yes.

A. And in my opinion, it is the small intestine.

Q. All right. As to the possible consequences of that, that's not something you can tell us from the pathology?

A. Without input from the clinical view, no.

Q. Just as to the original view that you formed about pneumonia being a cause of death, I would just like to look at some of the points you identified that supported that in that report. This is the report of 23 January 2019.

That opinion which you gave, which we read out in paragraphs A and B, just to remind us, everybody, A and B, your opinion. Histologically, you say:

"Having reviewed the materials..."

And we've been through them, you had the clinical materials, matters like that:

"In my opinion the most likely cause of [Baby C]'s sudden collapse and subsequent death would be the histologically identified acute pneumonia with acute lung injury."

Your opinion as to that is based upon histopathological and clinical factors which are consistent with acute pneumonia; is that correct, is that what that's based on?

A. At that point the clinical assessment, that's what was indicated.

Q. So we can understand this, or so I can anyway, those factors haven't changed in the 3 years that followed, have they, those factors remain, the histopathology and the clinical picture so far as that is concerned?

A. Yes, the -- well, the clinical picture you need to discuss it with the clinical experts --

Q. All right.

A. -- because the clinical picture that was put in front of me to assess later on, when I was invited to generate the other report that we referred to earlier, was different.

Q. One of the factors that you take from the clinicians' view -- sorry, Dr Marnerides.

A. So what remained the same is the finding -- the findings from the histological examination of the lungs. To put it in as simple terms as possible, in 2019, when I did my first assessment of the case, the clinical assessment I was given was that this baby had clinically pneumonia and the clinical view was that that pneumonia from their review was sufficient to explain the baby's death. That was the clinical view I had back then.

The histology that I reviewed confirmed the presence of pneumonia. That did not change, it cannot change, it is there. And my response to that was, yes, I see the pneumonia, given that the clinical assessment is that this is enough to kill this baby, I would agree, yes, this is the cause of death.

Later on, there was further review of the clinical evidence, more reports were produced, a radiologist assessed the images, radiology images. All this information was brought to my attention and we had a joint experts' meeting. During that meeting, the new clinical evidence that I was not aware of in 2019 was brought to my attention. And the clinical evidence was that the pneumonia being there was not sufficient to kill this baby for that deterioration at that point in time and there were other factors clinically/radiologically present that could explain this death.

Reviewing the photographs, I said, yes, the air you refer to is there, I will accept the clinical review that there is no sufficient clinical evidence for the pneumonia accounting to death. I have no alternative explanation for that air being there. As I explained yesterday, systemic inflammation, sepsis, there was localised inflammation.

Abnormalities of the colon, abnormalities of the small bowel, structural abnormalities. I did not feel that decomposition would be sufficient to produce this amount of air.

And then I came to the conclusion that this would be a baby dying with pneumonia rather than a baby dying from the pneumonia. And --

Q. In terms of -- sorry.

A. And that's how I came to formulating the cause of death I formulated in my last report.

Q. Right. Now, in terms of the opinions of the clinicians, you told us yesterday you received further clinical information that [Baby C] was clinically stable and responding to treatment and there was no collapse imminent. So the clinicians described a position, which meant he was stable before the collapse. That's right, isn't it?

A. That was the information I had.

Q. We have evidence from them, that's a matter the jury can assess, but as to that, that featured into your view as to whether or not [Baby C] really was suffering from pneumonia; that's what you're describing, isn't it?

A. There's no doubt he was suffering from pneumonia. The question is: would that pneumonia be sufficient to kill?

Q. Part of your reason for rejecting that as a primary cause of death is that the clinicians' view was that [Baby C] was stable before the collapses?

A. Yes.

Q. All right. As for air, you make reference in the more recent report to -- and it's in the findings -- to:
"The massive gastric dilation seen on the X-ray of 12 June 2015."
You refer to that.

A. Where exactly?

Q. It's at the response to your instructions, my page 8 of 16, point 2.

(Pause)

You see:

"Massive gastric dilation... on the X-ray of 12 June 2015 most likely due to deliberate exogenous air down the NGT"?

A. Yes. That's my understanding from the statements and the views expressed.

Q. By Dr Evans and Dr Bohin?

A. Yes. That's what I said.

Q. So that forms part of the picture that you rely upon in considering alternative diagnoses, for instance, could this be due to air down the NGT which led to the collapse on 13 June?

A. Yes.

Q. You're taking what they have said about that X-ray and applying it to the circumstances at the time of death; is that correct?

A. They said it and the radiology experts say it.

Q. We'll put the X-ray up briefly. It's at page 1996. Thank you. This is 12 June. Just reminding us all, lest we need to be reminded, that [Baby C]'s actual deterioration and final collapse began at 23.15 on 13 June.

Just scroll down to see the commentary that attaches to that, please. Enlarge that, please.

It makes reference to:

"Marked gaseous distension of the stomach and the proximal small bowel."

So this is what we're dealing with. Thank you, Mr Murphy, we can go back to the image as I ask these questions.

Drs Evans and Bohin were advancing this as material in support of deliberate administration of air down the NGT, weren't they? You make reference to that.

A. I don't understand why I'm being shown the radiology --

Q. So we know which image we're talking about.

A. I cannot comment on radiology.

Q. Right.

A. It's outside my area of expertise. If you invite me to comment on this radiology within my area of expertise, I can only assess the skeleton.

Q. I'm not asking you to comment on it. I'm just asking you to confirm this is the X-ray Drs Evans and Bohin identify as being most due (sic) to the deliberate exogenous administration of air via the NGT?

A. Dr Evans and Dr Bohin gave evidence. They could confirm if this is the X-ray. I cannot.

Q. In your report, Dr Marnerides --

A. In my report I say what the information I received from them was. I cannot say that this is the X-ray. They need to confirm it. They were here or they will be here. You can ask them.

Q. All I'm identifying is you say:

"The massive gastric dilation on the X-ray of 12 June was most likely due to deliberate exogenous administration of air down the NGT."

And you make it plain, above that, that is something that both Dr Evans and Dr Bohin consider or regard. That's right, isn't it? Do you see it at 2? All I'm asking is to confirm what it was they said to you, Dr Marnerides.

A. That's what I said, yes. That's what they said to me.
I cannot confirm that this is the X-ray though.

Q. We can take the X-ray down. One matter -- you introduced or you referred to the joint expert meeting in August 2022, didn't you? You have made reference to that?

A. Yes.

Q. And you refer to the fact that one matter that came up was CPAP belly, CPAP.

A. Yes.

Q. What you said yesterday, a note of this, was:
"In that meeting the clinicians felt it was unlikely that CPAP could explain that, could explain abdominal distension like that."
That's what you told us yesterday.

A. That was my understanding, yes.

Q. Just to be quite clear, at that meeting there were a number of experts, weren't there, not just Dr Evans and Dr Bohin?

A. Yes.

Q. There was also an expert, a neonatologist called Dr Hall?

A. Yes.

Q. Just so no one's under any illusion from what you said, his opinion was not that CPAP did not apply, his opinion was that CPAP did apply, wasn't it?

A. When I -- my recollection of the discussion is that CPAP could potentially apply, not did apply. My understanding was that he could not exclude CPAP.

Q. I'm asking you this because of what you said in evidence yesterday. We have the joint report. So far as Drs Bohin and Evans are concerned, they did not accept that that X-ray on 12 June was the result of CPAP belly. They did not.

A. Yes.

Q. And in fact, as a matter of record, so far as Dr Hall was concerned, his view was that that could be explained by CPAP belly. That's what we have.

A. Yes. Could, yes. You asked me whether it did explain.

Q. Yesterday when you told the jury the clinicians felt it was unlikely that CPAP could explain it, you were actually taking as your lead on that what Drs Evans and Bohin said, weren't you?

A. Not really. Not only. Because I apply my critical judgement to what a proposition was. The proposition of Dr Hall was that it could explain, so as a pathologist I had to consider that view. And in considering that view, I would have to run back to my number of post-mortem examinations and see whether distended stomach and bowel like this, which we have on photographs, we can show the photographs, I am more than happy to discuss those photographs of how distended the bowel was and the stomach -- was ever a discussion in my practice that this could be due to CPAP belly. That's when I formulate the opinion of unlikely. And the unlikelihood lies with that I have never in the past 10 years that I have been -- since 2013, that I have been doing this type of post-mortem examination come across even a suggestion that CPAP belly would result to deterioration of a baby, let alone this gastric distension that could be associated with a baby's death.

Based on the worldwide experience that CPAP is used in millions of babies in neonatal care units, I could not see that if this was a likely mechanism, this would not have been reported in any pathology paper or review or post-mortem examination or congress that I have been to or a case that I have discussed. There must have been at least some pathologist that has experienced that, and none of this is to my knowledge. That's why

I regarded the proposed mechanism as unlikely.

Q. So do you accept, and it's said, that on that X-ray of 12 June by Dr Evans and Dr Bohin, so we understand this, on that X-ray when it's said that that is due to the deliberate exogenous administration of air down the NGT, is that something you accept and work with in forming your pathological views?

A. Yes, having considered the alternative proposed explanation.

Q. Right. One other matter with [Baby C], please, Dr Marnerides. It is the question of the structure of the gut. I just want to ask you a little bit about that before we move on.

Dr Kokai identified, and his words are in the formal admission we all have, that:

"The loops in the bowel and the mesentery show normal rotation pattern apart from the descending colon, which crosses the midline into the right lower abdominal cavity and connects to connects the sigmoid colon, which is in a normal position."

I won't get too hung up on words, but if that's right that's not the conventional way in which the bowel flows, is it?

A. I explained yesterday, in considering the two possibilities of how that could be a probable contributor or not to death, whether that's an accurate description of what he actually saw. My opinion is that he did not accurately record what he actually saw. At least I cannot confirm that this is what he saw on the photographs from the post-mortem I saw.

On the basis of the radiology from Professor Arthurs and the joint review, the way they described the distribution of the air, the way I see the loops, I worked through two possible scenarios to explain it. I don't think this was the case here, I think that what he was seeing in front of him were dilated small bowel loops. But even if we accept that he was correct in what he wrote in his report, that it was an accurate description, what he describes as the loops, the sigmoid colon -- the descending crossing the midline and then the sigmoid colon coming back to meet with the rectum and go down, if this is what he's describing, this is

something that could in the circumstances be of pathological significance. And the circumstances would have been if this, if we accept it's correct, twisted around the excessive mesocolon and caused a volvulus there. There was no evidence of volvulus.

Dr Kokai did not see a volvulus, I could not see a volvulus on the photograph, there is no histology that would support a view of volvulus, there is no radiology, is my understanding from the reviews, that would support a volvulus. So we are presented with two things here.

Q. We dealt with those yesterday.

A. He either recorded it inaccurately in his report or, if he recorded it correctly, it's a moot point. It has no correlation with the increased amount of air that we see in the small bowel and the stomach.

Q. Right. Now, I'm not suggesting, so you can be quite clear, that whatever the disposition of the bowel at that point, that is directly a cause of death. That's not what I'm suggesting. We suggest it's a relevant aspect and may be related to what we see in the radiograph on 12 June. It's something to be considered. I'm just saying that so we can all follow this.

What I want to ask you is this. You have said elsewhere:

"We look at the constellation of circumstances and all the clinical evidence in forming a view."

That's how you do this, isn't it; yes?

A. Yes.

Q. So far as that bowel is concerned, we have heard that on 12 July radiograph the air is in the small bowel but not the large bowel. The fact the air does not pass through may be one matter to bear in mind in question as to whether or not there's some blockage there, one matter; do you agree?

A. No.

Q. All right.

A. I can explain why I cannot agree, because the small bowel meets the colon, the large bowel, at the ileocaecal junction. Okay? That's a valve. To put it into context, for that bowel to open and allow movement of contents from the small bowel to the large bowel, there needs to be some pressure difference between the two components, the large and the small bowel. If the air there did not produce that pressure, the valve would have not opened, so it does not necessarily tell us that there was an obstruction in terms of a malformation or an anatomical obstruction of any other description, it simply tells us that the air that reached the terminal ileum, the ileocaecal valve, was not of the pressure sufficient to open that valve. That's what it tells us.

Q. Right. So you're saying if air is being forced into the gut by the NGT, that's not at sufficient pressure to do that either?

A. I wouldn't know that. But to put this into perspective, the length the air would have had to travel is -- we're talking a metre. It's a big length. The bowel is like this (indicating), it's a big length that it needs to travel to. So the distension, the amount of air would have been sufficient to distend it, because we see it distended. Whether it would have been -- the pressure would have been sufficient to open the valve, I cannot answer that.

Q. Can you help us with, if it isn't all the way through the abdomen and there is air in that part, why the air wouldn't rather go down the large intestine rather than splint the diaphragm if there's capacity to move through the gut?

A. Not really, no.

Q. Can you actually answer that?

A. I can explain why I cannot agree, because the small bowel meets the colon, the large bowel, at the ileocaecal junction. Okay? That's a valve. To put it into context, for that bowel to open and allow movement of contents from the small bowel to the large bowel, there needs to be some pressure difference between the two components, the large and the small bowel. If the air there did not produce that pressure, the valve would have not opened, so it does not necessarily tell us that there was an obstruction in terms of a malformation or an anatomical obstruction of any other description, it simply tells us that the air that reached the terminal ileum, the ileocaecal valve, was not of the pressure sufficient to open that valve. That's what it tells us.

Q. Right. So you're saying if air is being forced into the gut by the NGT, that's not at sufficient pressure to do that either?

A. I wouldn't know that. But to put this into perspective, the length the air would have had to travel is -- we're talking a metre. It's a big length. The bowel is like this (indicating), it's a big length that it needs to travel to. So the distension, the amount of air would have been sufficient to distend it, because we see it distended. Whether it would have been -- the pressure would have been sufficient to open the valve, I cannot answer that.

Q. Can you help us with, if it isn't all the way through the abdomen and there is air in that part, why the air wouldn't rather go down the large intestine rather than splint the diaphragm if there's capacity to move through the gut?

A. Not really, no.

Q. Can you actually answer that?

A. I can explain why I cannot agree, because the small bowel meets the colon, the large bowel, at the ileocaecal junction. Okay? That's a valve. To put it into context, for that bowel to open and allow movement of contents from the small bowel to the large bowel, there needs to be some pressure difference between the two components, the large and the small bowel. If the air there did not produce that pressure, the valve would have not opened, so it does not necessarily tell us that there was an obstruction in terms of a malformation or an anatomical obstruction of any other description, it simply tells us that the air that reached the terminal ileum, the ileocaecal valve, was not of the pressure sufficient to open that valve. That's what it tells us.

Q. Right. So you're saying if air is being forced into the gut by the NGT, that's not at sufficient pressure to do that either?

A. I wouldn't know that. But to put this into perspective, the length the air would have had to travel is -- we're talking a metre. It's a big length. The bowel is like this (indicating), it's a big length that it needs to travel to. So the distension, the amount of air would have been sufficient to distend it, because we see it distended. Whether it would have been -- the pressure would have been sufficient to open the valve, I cannot answer that.

Q. Can you help us with, if it isn't all the way through the abdomen and there is air in that part, why the air wouldn't rather go down the large intestine rather than splint the diaphragm if there's capacity to move through the gut?

A. Not really, no.

Q. Can you actually answer that?