

Tuesday, 1 November 2022

(10.30 am)

... Omitted ...

(In the presence of the jury)

DR SANDIE BOHIN (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Would you identify yourself, please, for the record?

A. I'm Dr Sandie Bohin.

Q. Thank you, Dr Bohin. You have been instructed to consider the case of [Baby C]; is that right?

A. That's correct.

Q. Did you produce -- have you produced three separate reports, the first dated 6 December 2020?

A. Yes.

Q. Is that in effect your substantive report in which you set out your opinions on this particular case?

A. It is.

Q. Thank you. For the record, have you also produced two further reports which confirm that you, after your substantive report, received further information but in effect that that information didn't change your view and also answering a couple of questions that were posed to you as a consequence of your initial report?

A. That's correct.

Q. Thank you very much.

Well, using your first report as a template, please, Dr Bohin, did you set out in writing under paragraph 2.3 the material that you received?

A. Yes, I did.

Q. Did that include the records of [Baby C], some of which the jury has already seen?

A. Yes, it did.

Q. X-rays, material from Alder Hey Hospital in Liverpool, and a report for the coroner and statements made by other medical practitioners, including Dr Evans, Dr Arthurs, the radiologist, and Dr Marnerides?

A. Yes, that's correct.

Q. Were you also given extracts from witness statements made by Dr Beech, Gail Beech, who the jury saw last week, and Dr Rylance, who's -- I think part of Dr Rylance's statement at least was read to the jury?

A. Yes, I did.

Q. Thank you very much.

As before, were you there -- was your function to rubber-stamp an opinion that you had or to consider that opinion and offer your own opinion insofar as it coincided with or dissented from that of Dr Evans?

A. My role was not to rubber-stamp anything. My role was to review the case and to come to my own conclusions and then to say whether my conclusions agreed with those of Dr Evans, whether they differed from Dr Evans or whether I found any new information.

Q. Thank you. As part of your review of the evidence, did you set out part of the chronology of [Baby C]'s life?

A. Part of it, not all of it. I set out what I thought were the important, pertinent facts.

Q. In particular, and I'm looking at paragraph 4.16 now, did you deal with an X-ray, a picture of which has been shown to the jury, an X-ray that was taken on 12 June following the insertion of a long line into [Baby C]?

A. Yes, I reviewed that X-ray.

Q. And the jury will recall this as being the image of the line having gone up through a vein in [Baby C]'s left leg, I think; is that right?

A. That's correct.

Q. Thank you. And did you remark on a feature of the X-ray in particular?

A. I stated in my report that the line looked to be low. The X-ray was taken to look at the position of the long line, the line was in a low position, so not where the inserter would have intended, but it was in a usable position. I also noted a very distended, gas-filled stomach, with dilated, ie swollen, small bowel loops.

Q. So far as that was concerned, could you at the time see a nasogastric tube on the film?

A. Yes. I beg your pardon, I have written in my report that when I was viewing the images on the PC I have which is a laptop, I couldn't see a nasogastric tube on that particular film. That film has been shown several

times in this trial and it's clear that you can see a nasogastric tube on that X-ray when it's been projected.

It is in a very high position, so it's just where the gullet meets the stomach. So it isn't well down in the stomach, not in an ideal position. It sits very high in -- right at the end of the oesophagus, the gullet, where that enters into the stomach.

Q. Did you then summarise some of the observations of [Baby C] from that point on through to the time that he collapsed?

A. Yes, I did.

Q. And did you note the fact that -- and I'm looking at paragraph 4.25 of your report now -- that at 23.00 hours, late in the evening of 13 June, [Baby C] had been fed 0.5 of a millilitre of milk?

A. That's what's written in the notes. But I couldn't find actually any evidence of a nurse writing that down anywhere on an observation chart, but it is written in the notes that he was given half a millilitre of milk at that time.

Q. Yes. This is the matter that's been spoken of by Sophie Ellis; is that right?

A. Yes.

Q. And as you observe, on the feeding chart itself, and I think that is the chart on which there are notes of aspirates of black fluid or bile, that feed isn't

actually -- hasn't actually been noted; is that right?

A. That's right.

Q. Did you then record your interpretation of the material that you'd been given, which was that at about 11.15, [Baby C] had had an apnoea, a bradycardia and had desaturated and that several minutes later, the medical team were called and that CPR was in progress when they arrived?

A. That's correct.

Q. You then set out in your report the treatment that was given to [Baby C] in order to try to resuscitate him; is that right?

A. Yes.

Q. You then move on in your report to your opinion and comment. That's really where I'd like to start if we can, please.

A. Yes.

Q. So looking at your report, it's section 5. What conclusions did you reach as to [Baby C]'s general position following birth?

A. I think in common with what we have heard from the treating clinicians, we know that [Baby C] was premature. We also know that he was growth restricted. He was only half the weight that one would expect a baby of that gestation to be because of problems with the blood supply to the placenta. And those two things mean that [Baby C] is potentially at risk of complications, but

actually, in his early days, he managed very well indeed. He was on some respiratory support in the form of CPAP. Latterly, the day before he died, he actually had improved to the point where he was taken off CPAP. He clearly didn't like it, it clearly irritated him, and therefore the team chose a step down version of respiratory support in terms of Optiflow, which is I think less annoying for a baby, and therefore if they're not upset, they're likely to stay much more stable.

As well as that, he was actually taken off CPAP for a couple of times to have skin-to-skin with his parents, and so that isn't something you do if you are worried or concerned about a baby's condition, you wouldn't take them off CPAP. He managed very well.

So this was a baby who had known risk factors, but actually was not only doing very well but was actually improving in that he had been stepped down from CPAP to Optiflow and his -- the amount of inspired oxygen, the extra oxygen he was given, had also reduced.

So this wasn't a baby that was ill, this was a baby who was improving.

- Q. Thank you. Did you note the fact that on an X-ray, there was evidence of an issue so far as his left lung was concerned?
- A. Yes. [Baby C] clearly had an infection. His markers of infection were raised. His CRP was raised, not very

raised, but raised. And in a baby of that gestation and size, that's an alerting feature. The medical team treated him with antibiotics because of that and also carried out an X-ray, which clearly shows a left-sided pneumonia or changes on the X-ray compatible with a left-sided pneumonia.

So the treating team were quite clear that the pneumonia should be treated. And despite his small size, for a baby with pneumonia although he had that, he continued to improve. He came off his CPAP and actually went down on to Optiflow.

But yes, there were clear features of pneumonia but it was being adequately treated and he appeared to be responding to it.

- Q. And what was the treatment? I know the jury have heard the evidence about what he was receiving, but in this context what was the treatment that would have addressed or dealt with the pneumonia?
- A. The treatment he received was the standard treatment for babies in a neonatal unit and that's antibiotics and the Countess of Chester Hospital protocol was in keeping with national protocol, which was to use benzylpenicillin and gentamicin.
- Q. Thank you. Taking that particular issue head on, which you do at paragraph 5.4 of your report, what conclusions did you come to so far as the interface between pneumonia and [Baby C]'s collapse?

A. Well, I'm very clear that [Baby C] had pneumonia, he had signs on his blood tests that indicated an infection, and an X-ray that clearly showed pneumonia. He was on respiratory support in any case, but a baby with pneumonia will -- certainly babies of that size will often not survive a pneumonia, but actually he was -- they will slowly deteriorate and by that I mean they will have an increased respiratory rate, they will have an increased oxygen requirement, they won't be stable on CPAP and will need to go on a ventilator. There's often signs of a very slow decline.

[Baby C] didn't show any of these things. As I say, he actually was getting better, despite his pneumonia. So in fact, his respiratory rate was really very stable. In effect, he was breathing not with two lungs because one lung was infected, so actually the gas exchange in that left lung would not be as good as one would expect because of the infection. And despite all of those things, he still managed very well, he managed to have cuddles out with his parents, and so my conclusion was, yes, he had a pneumonia, he was being treated for that, but that was not what caused him to collapse and that his pneumonia didn't kill him.

Q. Thank you. If he was compromised in some way, what effect would the fact of his pneumonia have had on that?

A. It's difficult to say precisely, but in my view the fact that you've got an underlying infection and illness

probably means that you're going to be less responsive to resuscitation. Because babies, unlike adults, don't suddenly go from being okay to collapsing on the floor. Adults will commonly go -- do exactly that, they have a heart attack or a stroke and they go from being relatively well to being completely collapsed and unconscious. That's very uncommon in premature babies. You normally get some sort of hint that something is amiss and there's an escalating level of concern. This didn't happen with [Baby C].

But because he had pneumonia, when he did collapse I think that made resuscitation really very difficult and I think that contributed to the fact that he didn't survive that resuscitation.

Q. So that deals, at least so far as we are concerned, with the issue of pneumonia.

Can I just move to other issues, please, which are set out at paragraph 5.6 onwards of your report.

We've heard that [Baby C] had -- well, there was a problem that caused [Baby C] to be born premature and that that put him at risk of NEC; is that right?

A. That's correct, yes.

Q. We've also heard that until about 15 minutes before his collapse, he hadn't been fed in effect for over 3 days.

A. That's correct.

Q. Or not fed enteral feeds, I should say, for over 3 days. Is that standard practice?

- A. It's standard practice for any baby where there has been a concern about the placental blood flow because we know that those babies are at high risk of necrotising enterocolitis, so the rationale is that you just rest the gut and when babies are stable you give very small amounts of milk down the nasogastric tube in a very controlled way so that if the baby doesn't tolerate the feed for any reason, you can stop and reassess the situation. So this would be absolutely standard.
- Q. Thank you. So far as the -- just going back to the issue that you spoke of earlier concerning the gas in [Baby C]'s stomach on the 12th, did you go to the records to see what, if any, evidence there was concerning whether or not that had been aspirated or what might have been the cause of that?
- A. I did go to the records to have a look because babies who are on CPAP can accumulate gas in their tummy and in their gut. That can make the gut swell and in turn press up on the diaphragm. In order to minimise the effect of that, the nursing staff would aspirate the nasogastric tube and either they may get some stomach contents or milk, if a baby's being fed, or they may get copious amounts of air. It's usual practice to note down the volumes of air that you've aspirated to give the medical staff and other nurses an idea of how much air a baby is accumulating. I couldn't find any evidence that those volumes of air were recorded or if

any gas at all was aspirated. They may have been by nursing staff, but they weren't recorded.

And the other thing that's a difficulty for me was that for babies not fed, if the nurses -- well, as well as aspirating the tube, the nursing staff certainly wherever I've worked would also put the tube on free drainage so they would leave the top of the nasogastric tube open so that air can come out on its own and either attach that to a bag or just leave it free. And also, actively aspirate every 4 hours or 2 hours, whatever is deemed appropriate.

There was only fleeting mention of the tube being on free drainage, so I don't know (a) if the tubes were aspirated regularly and air was aspirated or if the tube was on free drainage. And if neither of those things happened, then gas would accumulate within the stomach and would have caused that X-ray appearance.

Q. And this is gas from what source, sorry, just to be clear?

A. From the CPAP.

Q. That's the 12th. What about the 13th? Were the records any different so far as the information they imparted as to whether the NGT was being aspirated and/or whether it was on free drainage?

A. We know the nasogastric tube was being aspirated because there's evidence of 0.5ml of fluid that is written down. There is no record if any additional air was aspirated.

Within the narrative, the nurse during the day has written that actually [Baby C] had two tubes replaced, two of the tubes were orogastric as opposed to nasogastric, so they went into his mouth and down into his tummy. Two of those were replaced during the day because he was very active and, finally, a third tube, which was a nasogastric tube, was replaced.

What I don't know is when those tubes came out and when they were replaced or what the time frame was between one tube coming out and the next tube going in because, of course, if that happened over several hours or while he was out with his parents, air would accumulate in his tummy and have no way of escape and there isn't a record of that, I'm afraid. So it's difficult to know how effective the nurses were at trying to get rid of the accumulated air.

In the narrative there is mention of the tube being on free drainage, but it's not clear whether that was for the entire shift or just after the nasogastric tube was passed, which was when [Baby C] went on to the Optiflow from the CPAP.

Q. And that would have been after the X-ray film taken with the long line in --

A. Yes.

Q. -- and the bubble in the stomach, as it was described?

A. Yes.

Q. Taking a step back then and helping us with the possible

causes of why it was [Baby C] had this bubble in his stomach on 12 June, what conclusions did you reach?

A. If the tube -- the nursing care of the nasogastric tube meant that the tube was not on free drainage and was not aspirated, then it could well have been down to accumulation of gas by CPAP. The alternative explanation is that there was a deliberate introduction of air down that tube.

Q. Yes. In that context does the views that were being expressed at the time, so for example by Dr Beech, who we heard from -- are they important or are they not important?

A. The medical staff at the time were clear that the abdomen was soft, that the baby was well, so they didn't appear to be concerned about the abdomen.

Q. Yes. I'm looking to paragraph 5.16 now, please. When you looked for a reason for [Baby C]'s collapse at about 11.15 or so on 13 June, could you find an explanation?

A. No. Babies like this don't just suddenly collapse. You get prior warning that something is amiss, they do not go from being stable to a cardiorespiratory arrest situation within minutes. So the kind of conditions that could cause problems within the gut I know [Baby C] didn't have, but in any case they would not have caused this sudden and catastrophic collapse which was unresponsive to resuscitation.

Premature babies do get infections and do become

unwell. They rarely collapse in this way or it'd be very unusual for them to collapse in this way, but they usually are responsive to resuscitation and he wasn't.

Q. So in that context, in your view, did the infection which [Baby C] had -- was that the cause of his catastrophic collapse?

A. No. I think he died with his pneumonia, not because of his pneumonia.

MR JOHNSON: Thank you very much. Those are all the questions I have for you.

MR JUSTICE GOSS: Right. It's not going to be possible to complete your evidence this afternoon. So we'll break off there and resume at 10.30 tomorrow morning, please. As I've said to you before, don't discuss this case or anything to do with it, particularly your evidence, with anyone. Thank you very much.

Ladies and gentlemen, 10.30 tomorrow morning, please, and remember your responsibilities as jurors.