



DATE: 22 June 2000

Mr Eugene Fee  
Director of Acute Hospital Services  
Sperrin Lakeland Trust  
Tyrone County Hospital  
OMAGH  
BT79 0AP

Dear Mr Fee

**Medical Report on Lucy Crawford**

I have reviewed the notes of this child as requested and will make a short summary and some comments on the possible sequence of events in this case.

Lucy had been admitted on 12.4.00 at around 19.30hours. Her G.P's letter stated that she had been pyrexia, not responding to Calpol, that she was drowsy and lethargic, that she was floppy and not drinking. He noted her temperature to be 38 C and wondered if she could possibly have a urinary tract infection. On admission the history revealed that the fever had been going for 36 hours and indeed that she had been vomiting for a similar period of time. She had been off her feeds to an extent of 5 days and that she was drowsy for about 12 hours. Her stools were reported to be normal. She had a temperature of 38 C on admission and was noted to be 9.14kgs. This would be around the 2<sup>nd</sup> centile for her age. Her capillary refill time was said to be > 2 seconds. Her abdomen was soft and bowel sounds were present. A diagnosis of viral illness was made.

Her urines were checked. A blood count revealed a somewhat raised WCC at 15 with 13000 of these being neutrophils. Urea & electrolytes were essentially normal apart from a raised urea at 9.9. It is reported that the taking of oral fluids by the child should be encouraged. An intravenous line was inserted at 23.00hours by a Consultant Paediatrician and solution 18 was started. It would appear that this continued at a rate of 100mls/hour over the next 4 hours. The child also drank about 150mls prior to this. At around 02.30hours the child passed a very large runny bowel motion and was transferred into a side room. At around 02.55hours of 13.4.00 the mother buzzed a nurse to say that the child was rigid. When the nurse saw the child she confirmed that it was rigid in the mother's arms and called a second nurse at around 0.300hours. Lucy's colour was recorded as being satisfactory and



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her respirations were satisfactory. A junior doctor was bleeped at that stage and the child was turned on her side and given some oxygen. 2.5mgs of Diazepam was administered rectally. However it is recorded that within one minute of this a large bowel motion occurred and I suspect most of the Diazepam was expelled. On reviewing the child's electrolytes in and around that time it was decided that because the sodium was low that normal saline should be given. At 03.20hours it was noted the respiratory effort was decreased. An airway was inserted and the child was bagged with bag and mask. She was ultimately intubated by an Anaesthetist and Flumazenil, 100mcg was given. Her pupils were noted to be fixed and dilated. She was transferred to the intensive care in the Erne Hospital and ventilated in a high percent of oxygen. Mannitol 20% was given and intravenous Claforan.

At 06.30hours she was transferred to the Royal Belfast Hospital for Sick Children's ICU and I understand that she subsequently died.

I have subsequently been made aware that the Pathologist reported that the child had a significant pneumonia and cerebral oedema.

I will attempt to answer a few questions which obviously came up from reviewing the notes.

*Why was the child noted to be floppy in the first place?*

I suspect she may well have been quite ill on admission. The raised WCC with a predominance of neutrophils may go along with a bacterial infection and could have been due to the pneumonia which was found on P.M. However as stated before this is speculation.

*Was the child dehydrated on admission?*

I think the urea measurement of 9.9 on admission does indicate a degree of dehydration. This level of urea would certainly not go with renal failure.

*Fluids.*

She was treated with Solution 18 which would be appropriate. On looking at the volume of fluids over the 7 hour period between admission and 3.00a.m. when she had the possible seizure she got a total of 550mls. This would include 150mls oral and 400mls i.v. as the intravenous drip was running at 100mls/hr over a 4 hour period. Calculating the amounts over that period of time this would be about 80mls/hr. I



have calculated the rates of fluid requirements. If she was not dehydrated she would have required 45mls/hr. If she was 5% dehydrated it would have worked out at 60mls/hr and 10% dehydration works out at 80mls/hr. I would therefore be surprised if those volumes of fluid could have produced gross cerebral oedema causing coning. I have however noted that there was no prescription written for the fluids indicating the volume per hour that should be given.

*Was there evidence of renal compromise?*

I have noted that there was a urinary output and that there was no oedema of the face or peripheries noted. Ward testing of the urine showed some protein and ketones. However lab testing did not confirm proteinuria. The ketones would certainly be present in any child who is not eating well or indeed is vomiting.

*Did the child have a seizure or did she "cone" at 3.00a.m?*

I feel it is very difficult to say what happened in and around this time. It is certainly possible that she had a seizure and may even have had a period of time when she was hypoxic before medical attention was drawn to the fact she was unwell. However I cannot say that this is the case. It may be that mother informed the ward staff immediately she noted the problem but again this is not clear to me from the notes provided.

*Apnoea.*

This could have occurred as the result of a seizure. It could have occurred as a result of coning. I have looked at the possibility that it could have been due to medication with rectal Diazepam. I note the child was given 2.5mgs but it was stated that within one minute of administration of this she had a large bowel motion and I presume most of the Diazepam actually came out. Certainly the recommended dose of Diazepam that can be given to a child who is seizing is 500mcg/kg. Therefore she could have been given up to 4.5mgs and certainly 2.5mgs given rectally to this age of child for a seizure would be appropriate. I am aware that some child have idiosyncratic reactions to Diazepam but normally this would be if they are given by the intravenous route and these events are very rare.



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*Was the resuscitation adequate?*

The notes state that the child had a good heart rate and colour throughout this event and that initially the child's respirations were adequate. Obviously when she became apnoeic in and around 03.20hours she required an airway insertion and bagging and she was ultimately then intubated by an Anaesthetist. During resuscitation it obviously became apparent that the child's sodium had dropped to 127 and potassium down to 2.5 and a decision to use normal saline was made. I am not certain how much normal saline was run in at that time but if it was suspected that she was shocked then perhaps up to 20mls/kg could have been given.

I hope these comments are helpful. I find it difficult to be totally certain as to what occurred to Lucy in and around 3.00a.m. or indeed what the ultimate cause of her cerebral oedema was. It is always difficult when simply working from medical and nursing records and also from not seeing the child to get an absolutely clear picture of what was happening. However I hope I have attempted to be as objective as possible with the information available to me.

Yours sincerely

R J M QUINN, MB, FRCP, DCH, MFPaedRCPI  
Consultant Paediatrician