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Case No. 24 - Postpartum Anemia and Pulmonary Edema Complicating a HELLP Syndrome Patient with Gallstone Surgery Resulting in a Maternal Death

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POSTPARTUM ANEMIA AND PULMONARY EDEMA COMPLICATING
A HELLP SYNDROME PATIENT WITH GALLSTONE SURGERY
RESULTING IN A MATERNAL DEATH

On January 6, 1998, Jane Miller, who was then 8 months pregnant, called her obstetrician, Dr. George Lane, reporting severe pain emanating from the right upper abdomen. Dr. Lane directed Jane to go to the Island Hospital Emergency Room and ordered that a sonogram be performed. The radiologist reported that the sonogram revealed the presence of gallstones within her gallbladder.

The development of gallstones commonly occurs during pregnancy. The presence of gallstones, per se, do not necessarily cause pain. However, if a gallstone obstructs the outflow and/or produces an inflammatory reaction in the wall of the gallbladder, that may produce severe right upper quadrant pain (as Jane reported).

When such a gallbladder attack occurs, a general surgeon will ordinarily make an assessment to see if the symptoms may resolve on conservative management (pain medication). Surgical removal of the gallbladder is indicated if the pain persists and/or if there is evidence that the gallbladder may rupture.

Dr. Lane called Dr. Thomas Jones, a general surgeon, for a surgical consult. Dr. Jones and Dr. Lane saw Jane in the emergency room. Dr. Jones concluded that Jane's pain was related to an active gallbladder attack but perceived no gallbladder-related emergency. According to Dr. Jones, Jane could be treated conservatively with pain relief medication and if the pain resolved and no gallbladder-related emergency developed, Jane could be evaluated after the delivery of her child to see at that time if gallbladder surgery would be performed electively.

Dr. Lane agreed with the assessment and the plan of management. Neither Dr. Lane nor Dr. Jones discussed whether Jane's right upper quadrant pain might be related to some pregnancy-induced complication and neither Dr. Lane nor Dr. Jones noticed that Jane's blood pressure was 194/110 which was markedly elevated (hypertension). Her normal blood pressure was 120/70.

There was no discussion of possible "HELLP Syndrome" producing the severe right upper quadrant abdominal pain with associated liver dysfunction.

There was no discussion that patients who have HELLP Syndrome are at risk for the development of fluid retention in the lungs (pulmonary edema) which can produce a serious respiratory (breathing) disorder. Therefore, careful fluid management to avoid pulmonary edema and transfusion of red blood cells to avoid anemia, are part of the mainstream of supportive care.

There was no discussion that the primary treatment for HELLP Syndrome is to remove the underlying trigger mechanism that creates the HELLP Syndrome in the first place, which is the pregnancy itself. Delivery by caesarean section as quickly and safely as possible is in the best interests of mother and baby.

Once the baby has been delivered, the mother must then be carefully monitored to make certain that the underlying disorders are resolving.

After Jane was admitted to the Island Hospital at about 10:00 a.m., a nurse noticed that her blood pressure had been markedly elevated and repeat blood pressure readings reflected that her blood pressure remained elevated.

At 10:15 a.m. the nurse notified Dr. Lane, who was at home. Dr. Lane advised that the elevated blood pressure must be related to the gallbladder problem and therefore the nurse should notify Dr. Jones.

At 10:30 a.m. the nurse notified Dr. Jones (also at home) who stated that the elevated blood pressure must be due to an obstetrical problem and therefore the nurse should advise Dr. Lane. The nurse stated that she had already advised Dr. Lane, and Dr. Jones advised the nurse that she should try again. The nurse decided to wait and observe.

The nurse continued to observe and monitor Jane and at about 2:00 p.m. advised Dr. Lane that a routine blood chemistry exam had revealed a seriously abnormal liver function test. Dr. Lane now connected the high blood pressure and abnormal liver function test with HELLP Syndrome and advised that Jane should be prepared for emergency caesarean section.

Dr. Jones was notified and he advised that since C-section was going to be performed under general anesthetic, he would use that opportunity to remove the gallbladder after the baby had been delivered.

Dr. Jones' rationale was that he concluded the right upper quadrant pain actually was coming from the gallstones and that Jane would eventually need gallbladder surgery in the future. Dr. Jones was unaware of what HELLP Syndrome actually consisted of and neither Dr. Jones nor Dr. Lane discussed with one another the risk to Jane from extending the surgical time under general anesthetic (the longer the general anesthetic the greater the adverse effect on the liver) or the risk of adding additional surgery (the greater the stresses on the mother the more problematic her post delivery recovery becomes).

Jane and her husband, John Miller, were simply advised by Dr. Jones that her pain was due to the gallstones and that it would be best to have gallbladder surgery and they consented to the surgery.

A general anesthetic was induced by 3:30 p.m.; C-section was completed by 4:00 p.m. and then, under the same general anesthetic, Dr. Jones performed gallbladder surgery completing the procedure by 5:00 p.m.

Jane's HELLP Syndrome had progressed to a very dangerous level with blood pressures rising to a level of 207/105. Jane, however, tolerated the surgical procedure and in the recovery room she appeared stable to the point where by 7:30 p.m. her blood pressure had come down into a normal range. Assuming that Jane was stable, both Dr. Lane and Dr. Jones authorized her discharge to a regular room and the only doctor in the hospital available to "cover" Jane was a house physician named Dr. Peter Frank.

On January 6, 1998 at 9:00 p.m. a routine postoperative blood test revealed that Jane's hemoglobin (red blood count) was low at 8.7. Dr. Lane was notified at home of this low red blood count. Dr. Lane knew that if the HELLP Syndrome remained active, the low blood count could get worse, but Dr. Lane attributed the low blood count to normal surgical blood loss and he ordered no follow-up testing.

At 11:00 p.m. the nurse called Dr. Jones and advised him of

the low blood count. Dr. Jones requested that another blood test be drawn, believing that if the blood count went lower a transfusion would be necessary. Dr. Jones, however, perceived this really was not a general surgical problem but an obstetrical problem and therefore it would be up to Dr. Lane to follow-up.

At approximately 1:00 a.m., on January 7, 1998, Dr. Frank attempted to draw blood from Jane Miller. Dr. Frank had not discussed the medical issues with either Dr. Jones or Dr. Lane. Dr. Frank believed this was just a routine postoperative blood test. When Dr. Frank was unable to obtain a vein, he advised Jane Miller that they could wait until the following morning to obtain the blood test. There was no discussion between any of the three doctors about performing a femoral stick which could have obtained the blood for testing.

On January 7, 1998, at 3:00 a.m., the nurse reported to Dr. Jones there was a decrease in urine output.

If serious anemia had developed a patient, such as Jane, would try to compensate by shunting blood away from the kidneys, thereby resulting in decreased urine output. Dr. Jones stated he still believed that this was all part of an obstetrical problem but ordered an increased infusion of fluids (fluid challenge) to "get the kidneys going." Dr. Jones was unaware that a fluid challenge may trigger a pulmonary edema in a HELLP Syndrome patient.

Dr. Frank administered the fluid infusion but did not advise either Dr. Jones or Dr. Lane that no follow-up blood test had been obtained and neither Dr. Jones or Dr. Lane inquired as to whether there had been a follow-up blood test. The nurse also advised Dr. Lane of the decreased urine output and the fluid challenge ordered by Dr. Jones. Dr. Lane though aware of the risks of pulmonary edema stated he assumed that Dr. Jones knew of the potential problem and was appropriately dealing with the issue.

With the fluid challenge running into her, Jane was left alone in her room, last observed by a nurse at 5:00 a.m. When the nurse returned at 5:20 a.m. she found Jane unresponsive with a faint pulse that quickly disappeared. A cardiac arrest code was called. Resuscitation attempts ultimately resulted in restoring the heart beat but the multi-organ damage from the shock produced by the cardiac arrest was irreversible and Jane

was pronounced dead several hours later. During the cardiac arrest procedures a blood test revealed that Jane's hemoglobin level had gone down to a severe level of 3 and that her lungs had filled with water (pulmonary edema) creating a respiratory crisis. The combination of severe anemia and pulmonary edema produced the cardiac arrest.

Jane's anemia had not been corrected with a blood transfusion so as to avoid the decreased urine output, and to avoid the need for the fluid challenge, which produced the pulmonary edema.