

PedsCases Podcast Scripts

This is a text version of a podcast from Pedscases.com on "<u>Sudden Infant Death Syndrome</u>." These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at <u>www.pedcases.com/podcasts</u>.

Sudden Infant Death Syndrome (SIDS)

Developed by Ashlee Yang and Dr. Mel Lewis for PedsCases.com. October 2, 2016

Hi everyone, my name is Ashlee Yang, a medical student at the University of Alberta. I'm joined today by Dr. Lewis, a Pediatrician and Professor here at at the University of Alberta and Stollery Children's Hospital in Edmonton, Alberta, Canada. This podcast is designed to give you an approach to sudden infant death syndrome, or SIDS.

Dr Lewis:

Let's start with a clinical case. A 3 month-old male infant presents to the pediatrics emergency department via ambulance. Earlier that day, his mother had just finished breastfeeding and swaddled her baby with soft blankets, letting him sleep in his crib. When she checked on him approximately 30 minutes later, she found him not breathing, pale, limp and unresponsive. She called 911. CPR was initiated when the paramedics arrived. The baby was intubated and resuscitation protocols were instituted.

In terms of medical history, his mother had received routine prenatal care. She does smoke but cut down during pregnancy. The infant was born preterm via spontaneous vaginal delivery with a birth weight of 2.5 kg. There were no complications and since birth he had been healthy with no concerns. When the baby arrives in the ED, he is not moving spontaneously and appears mottled and pale. There is a pulse and chest rise with CPR. His temperature is 35 degrees Celsius. Resuscitation is continued in the ED. Unfortunately, there is no response, and the infant is pronounced dead after 25 minutes.

Ashlee:

What do you think has happened? Why might this have happened? What else is on the differential? The leading cause of post-neonatal infant death is SIDS or Sudden Infant Death Syndrome - a complex, multifactorial disorder.

Learning about SIDS is important. Therefore, the objectives of this podcast are to:

- 1. Define SIDS
- 2. Understand that SIDS is a diagnosis of exclusion and a thorough consideration of alternate diagnoses must be completed
- 3. Review the incidence of SIDS
- 4. List the risk factors for SIDS including maternal, pregnancy and infant risk factors
- 5. Describe the strategies that decrease the risk of SIDS
- 6. Discuss key counselling messages for parents on these strategies to prevent SIDS and create a safe sleep environment

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Dr Lewis:

Many sudden and unexpected infant deaths occur every year. These deaths are referred to as SUID, or sudden unexpected infant deaths. Sometimes we can identify a cause for SUID, such as underlying medical disorders like metabolic disease or fatal child abuse. Other times the cause of death is due to accidental suffocation or entrapment during sleep.

However, at times, the death is difficult to explain. SIDS is a type of Sudden unexpected Infant Death (SUID). SIDS is defined as the sudden and unexpected death of an infant less than 12 months of age, in which the cause of death cannot be found despite a thorough investigation including clinical and family history, physical examination, autopsy and death scene investigation. SIDS is a diagnosis of exclusion and thus other causes of death must be ruled out. The investigations can be challenging because often no one witnesses these deaths. It can be especially difficult to distinguish between suffocation and SIDS.

Ashlee:

How common is SIDS? Around 1 in 2000 infants born will die from SIDS in Canada. Higher rates are found in ethnic groups, such as Aboriginal and African-American populations. SIDS affects infant boys 30-50% more often than girls. Infants between 2-4 months of age are at the greatest risk, and 95% of cases happen before 6 months of age. The risk of SIDS is also increased in siblings of infants who have died of SIDS.

SIDS is a multifactorial condition. The current hypothesis for why it happens is called the Triple Risk Model. According to this model, SIDS occurs in infants with 1) an underlying vulnerability, such as being born preterm, that 2) experience an external stress or a trigger event, like sleeping prone, during a 3) critical and unstable developmental period. These 3 factors in combination lead to a failure of protective responses.

Although the cause of SIDS is still not fully understood, we now know there are numerous modifiable and non-modifiable maternal and infant risk factors.

Dr Lewis:

First, let's talk about Maternal and pregnancy risk factors for SIDS.

1) **Sociodemographic risk factors** include low socioeconomic status, younger maternal age, lower maternal education level, aboriginal or African ethnicity, and single marital status.

2) Another significant maternal risk factor is **substance use**, including smoking, alcohol and drug use, especially opiates. Alcohol use has the highest risk for SIDS when used around conception and in the first trimester.

3) There are also **pregnancy related risk factors** such as receiving inadequate prenatal care or late prenatal care and shorter intervals between pregnancies. Indicators of the baby experiencing stress in utero, such as low birth weight, preterm birth, intrauterine growth retardation (IUGR), and intrauterine hypoxia, also places infants at higher risk for SIDS.

Ashlee:

Next, let's talk about infant risk factors for SIDS.

1) Gender and age are both risk factors. As previously mentioned, infants between 2-4 months of age are at highest risk for SIDS. Boys are also affected more than girls.

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2) There are also genetic risk factors. Genetic studies have identified some differences seen in infants dying of SIDS, including mutations in genes involved in infection, inflammation, cardiac ion channels, and autonomic nervous system development. These genetic changes can cause abnormalities such as arrhythmias, deficits in cardiorespiratory control and the ability to arouse and respond to oxygen deprivation or asphyxia.

Complex interactions between genetic and environmental risk factors determine the risk of SIDS. For example, sleeping prone or nearly face down can result in episodes of airway obstruction. Infants with impaired ability to arouse and respond to asphyxia are at risk for sudden death while healthy infants will arouse before the episodes are life threatening.

Dr Lewis:

3) Finally, unsafe sleep practices and the sleeping environment are significant risk factors for SIDS that are modifiable. Unsafe sleeping practices include prone or side sleeping position, soft mattresses, older mattresses, and soft fluffy bedding. Bed sharing has also been shown to increase risk for SIDS, whereas room sharing is associated with lower rates of SIDS. Bed sharing is particularly hazardous when other children are in the same bed, and when the parent is with the infant on a couch or small sleep surface.

Ashlee:

Going back to our case ... although the story sounds like SIDS, remember that it is a diagnosis of exclusion. Regardless if the cause is identifiable or not, a thorough investigation and autopsy for any sudden infant death is important. If fatal child abuse is suspected, the safety of other children at home may be in question. Metabolic abnormalities, if discovered, may affect future pregnancies and genetic testing. Factors in the case that suggest an increased risk for SIDS include maternal smoking, preterm birth, low birth weight and swaddling with soft blankets. It would be important to provide emotional support and connect the mother to resources to help her and her family get through this difficult and unexpected situation.

After a full investigation and autopsy, SIDS is confirmed. The next time you see the mother, she asks how she can lower the risk of this happening again.

Dr Lewis:

How do we prevent SIDS and counsel parents?

Currently, no effective way exists to screen in early infancy for intrinsic or genetic abnormalities that increase the risk for SIDS. However, there are strategies to reduce the risk of SIDS, such as receiving regular prenatal care and creating a safe sleep and home environment.

Here is some advice you can provide to parents:

- 1. Seek prenatal care early and follow up regularly.
- 2. Stop or reduce smoking during pregnancy. After the baby is born, avoid smoking inside the house and around the baby.
- 3. Breastfeeding is encouraged as it reduces risk for SIDS and has other health benefits.
- 4. "Back to sleep, front to play" is an important phrase to remember– place the baby on his or her back when sleeping or napping, not on their front or side. Supervised "tummy time" or playtime in prone position while awake is good.

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- 5. For babies under 6 months of age, room sharing is encouraged but bed sharing should be avoided. Babies should sleep in their own crib, preferably in the same room as parents. Do not place the baby in a bed, sofa or chair with other children.
- 6. Use a flat, firm surface for sleep. Babies can turn onto their stomach or side and bury their face in these soft materials, causing them to suffocate. Pillows, air mattresses, couches/sofas or soft materials **are not safe** sleep surfaces.
- 7. Playpens and car seats are not safe alternatives to a crib for supervised sleep.
- 8. Keep loose or soft bedding materials such as stuffed animals, comforters, pillows, bumper pads etc. out of the sleep environment.
- 9. Avoid overheating and over bundling...Dress the baby lightly and set the room at a comfortable temperature. If swaddling, make sure the airway is clear and there is enough room for legs to move.

Ashlee:

Finally, here a few key take home points:

- SIDS is a diagnosis of exclusion and other causes for sudden unexpected infant death such as fatal child abuse and underlying medical disorders must be ruled out with a thorough investigation.
- SIDS is multifactorial and caused by a combination of infant vulnerability, a critical development period and external stressors.
- Maternal risk factors include low socioeconomic status, substance use, and inadequate or late prenatal care.
- Infant factors include male gender, age between 2-4 months, genetic vulnerability and unsafe sleep environment and practices.
- There are strategies to prevent SIDS. Remember to counsel parents on safe sleep practices and other ways to reduce risk for SIDS.

Thank you for listening to this PedsCases podcast on Sudden Infant Death Syndrome. Stay tuned for more podcasts!

References

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