

David's Time in the Bubble

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Involving many situations that developed in a short time frame, David Vetter's short life split the history of medicine into before and after. His parents wanted to increase their family and decided to have a new baby, despite the consequences it would imply: they had already lost one son because of a hereditary condition, the year before David was born. The family was harshly criticized because they had decided to have David anyway, as no test could confirm that he would have this condition before birth. Sadly, David was also born, in 1971, with severe combined immunodeficiency (SCID). The entirety of David's 12-year-long life happened in a protective bubble that was built in the early 70s to protect him from the environment. His story interweaves information from different courses related to Oral Anatomy, particularly Biology, Anatomy and Physiology, and Microbiology.

To begin, his story relates to the role that viruses can play in health. According to the Centers for Disease Control (CDC), the Epstein-Barr virus (EBV) is one of the most common human viruses and most people get infected at some point in their lives. The CDC also states that after you get an EBV infection, the virus becomes latent (inactive) in your body. In some cases, the virus may reactivate. This does not always cause symptoms, but people with weakened immune systems are more likely to develop symptoms if EBV reactivates. This is important because it shows the reality of what we are exposed to on a daily basis, and the seriousness of what pathogens such as viruses represent for the immunocompromised population. David's case was linked with the confirmation that Epstein-Barr virus could be cancerous: "Sadly, in 1984, four months after receiving a bone marrow transfusion, David died from lymphoma—a cancer later determined to have been introduced into his system by the Epstein-Barr virus" ("The Story of David"). His case was therefore proof that there is a direct correlation between immune response and a viral infection, because it was a common type of virus that finally took David Vetter's life.

David Vetter's case also gives a better understanding of the action and importance of our immune and lymphatic systems. The main difference between these two systems is that, even though the organs of the lymphatic system are the same as the organs of the immune system, they differ in their function. The immune system provides resistance to infections and toxins, through two major types of immunities: innate and adaptative. Innate immunity is a nonspecific type of immunity that is present at birth, generating nonspecific immune responses to all types of pathogens. In addition, adaptative immunity allows the body to produce where pathogen-specific immune responses. Adaptative immunity itself comes in two types: the humoral and cell-mediated immunities. The lymphatic system's role is to develop these humoral and cellular immunities, along with producing lymphocytes. In David's case, both the lymphatic and immune systems were already affected due to his condition, before he contracted EBV. While EBV did not seem

to not have any direct connection with the immune and lymphatic systems, David's story made it clear how this virus affects them both. In his case, EBV made it even more difficult for the body to fight infection, resulting in illnesses, complications, and severe symptoms.

As it was mentioned in the beginning, David's story also relates to the history, progress, and evolution of medicine in this field. David's short life reveals the improvements that medicine made regarding his health condition. For 12 years, experts proposed and set different treatments. Initially, they talked about the possibility of the perfect blood match for a bone marrow transplant because it was the only solution offered for him at the time. Years later, due to new medical advances, they tried a bone marrow technique that did not require a perfect blood match. Unfortunately, the treatment did not work for David (Haberman).

Nowadays, medical science has progressed to a point where "a bone-marrow transplant is usually successful in treating SCID when it is done within a baby's first three months" (Haberman). Moreover, a modern medical technique, gene therapy, still under study and not yet approved, proposes new alternatives for the treatment of inherited conditions such as SCID. According to the NIH, "Gene therapy is an experimental technique that uses genes to treat or prevent disease. In the future, this technique may allow doctors to treat a disorder by inserting a gene into a patient's cells instead of using drugs or surgery. Although gene therapy is a promising treatment option for several diseases (including inherited disorders, some types of cancer, and certain viral infections), the technique remains risky and is still under study to make sure that it will be safe and effective" ("What Is Gene Therapy?").

Finally, besides medical considerations, David Vetter's case brought to light the ethical considerations for this type of case. Either doctors expected to find a cure for David quickly, expected him to die before reaching twelve years of age, or both; before him, no child had survived that period of time under his circumstances. In fact, each of his birthdays raised ethical dilemmas. For instance, what if, regardless of the risk, a mature David at some point demanded freedom from his hermetic environment? Mary Murphy, the psychologist who worked with David, "recounted how the boy, always cheerful in televised images, sometimes raged off-camera at the terrible hand fate had dealt him" (Haberman). In the beginning, when Murphy asked David to define a tree, he "responded that it was a brown rectangle with a green oval on top" This stunned her, as his knowledge on geometry was great but his awareness of daily life so little.

In general, David's perception was sometimes described as one-dimensional, as he could never feel the wind on his skin. Later, Murphy reported David saying, "I am a mouse surrounded by ten cats, and there are no dogs to chase the cats away Where do you suppose I could get some legal advice?" Reflecting on this topic, Raymond J. Lawrence spoke at a 1975 conference that focused on the ethics of the boy's medical care: "Could this person live for 15 years in that kind of isolation and be human?" (Haberman).

It is uncertain what the Vetter's family truly felt or what they went thought behind the doors of their home. Nevertheless, since kids born with this condition at that time were expected to live no more than a year, David's life suggests that they truly loved and supported each other and they did their best for their child. Otherwise, how is it possible that a boy born under such circumstances could have reached twelve years of age? The faith and trust they had in medicine must have

made them think there would be a cure. David's life and his family's bravery was a gift for humanity, because if not for them, many findings related to EBV would not have been possible.

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