PHYSIOLOGICAL BASIS OF ACUTE CARE

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SAUNDERS
ELSEVIER
Physiology of Death

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INTRODUCTION

Death represents the end of life. Death occurs when cells in the body have exhausted their supply of adenosine triphosphate (ATP) due to the absence of oxygen in the cell. Since oxygen cannot be stored in the cell, cells are dependent on the continuous delivery of oxygen for life. As some organs are more sensitive than others to lack of oxygen, death occurs at different rates in different tissues and organs.

DEFINITION OF DEATH

The respiratory and cardiovascular systems, being the two systems responsible for oxygen delivery, need to be intact to sustain life. In the past, cessation of cardiac or respiratory function would have marked the end of life. Traditionally, death is said to have occurred when there is irreversible cessation of circulatory and respiratory functions, or in simple terms, absence of spontaneous breathing and pulse or heart beat.

This condition is easily diagnosed by even a lay person, without the aid of additional equipment (although occasionally mistakes could be made). Subsequently, irreversible cessation of all functions of the entire brain, including the brain stem, also became recognized as death. Brain death (or cessation of brain stem function), without medical intervention, would have heralded death due to the immediate cessation of respiration or the circulation.

However, modern medical technology has enabled us to support the respiratory and cardiovascular systems, delaying the diagnosis of death. Artificial support of the cardiac and respiratory systems maintains the appearance of life in the absence of brain stem function. It is in situations such as these that brain stem function testing is performed by specialists, in order to make the diagnosis of death. In any case, artificial support of brain dead individuals only delays the inevitable, because eventually, within 1–2 weeks, the heart will fail despite all efforts to prolong life, and death in the traditional sense will occur.

However, in the majority of situations, the moment the heart stops beating is generally, and most definitively, the accepted time of death.