

Posttraumatic Inflammation Is a Complex Response Based on the Pathological Expression of the Nervous, Immune, and Endocrine Functional Systems

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172

ALLER ET AL

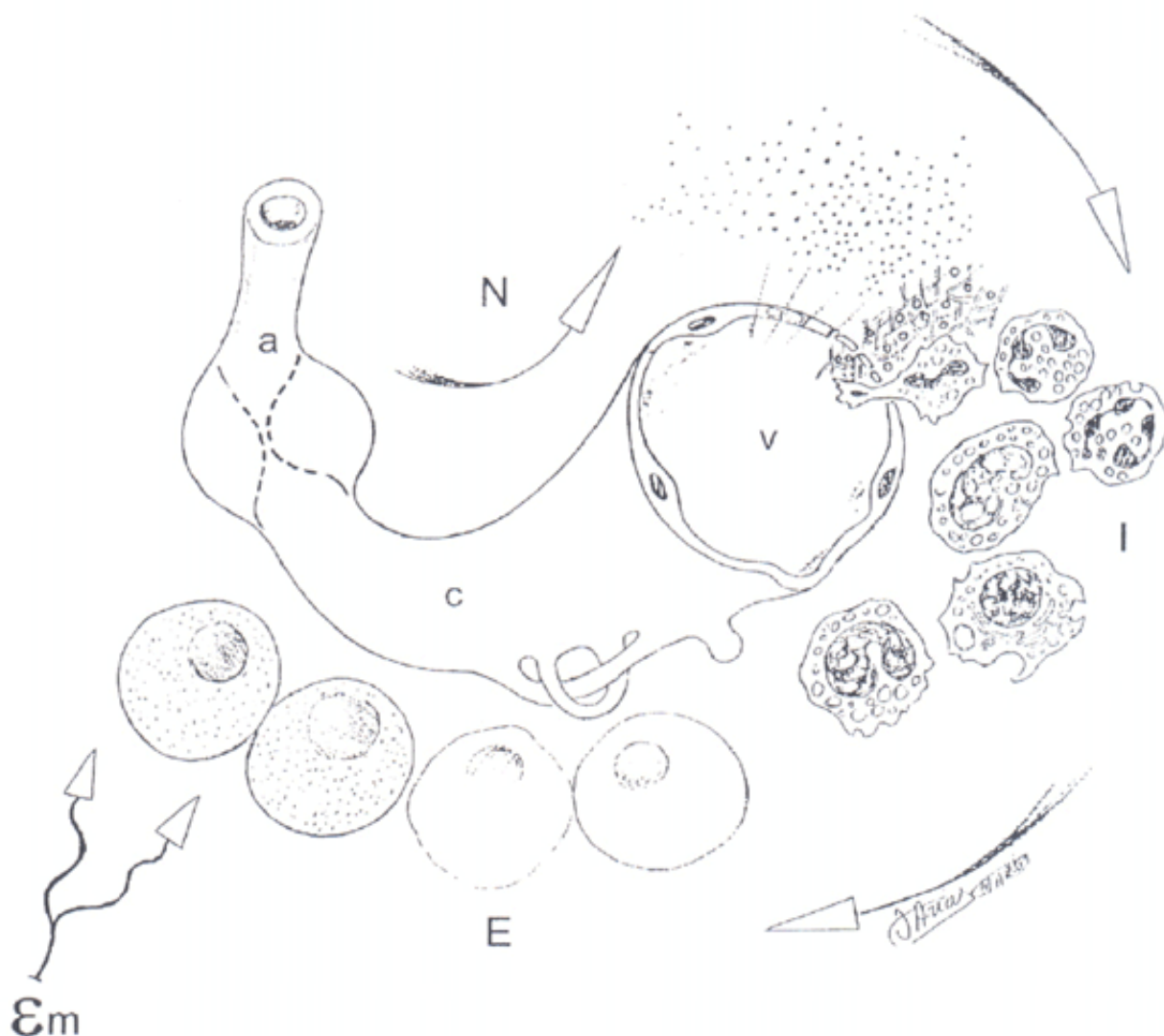
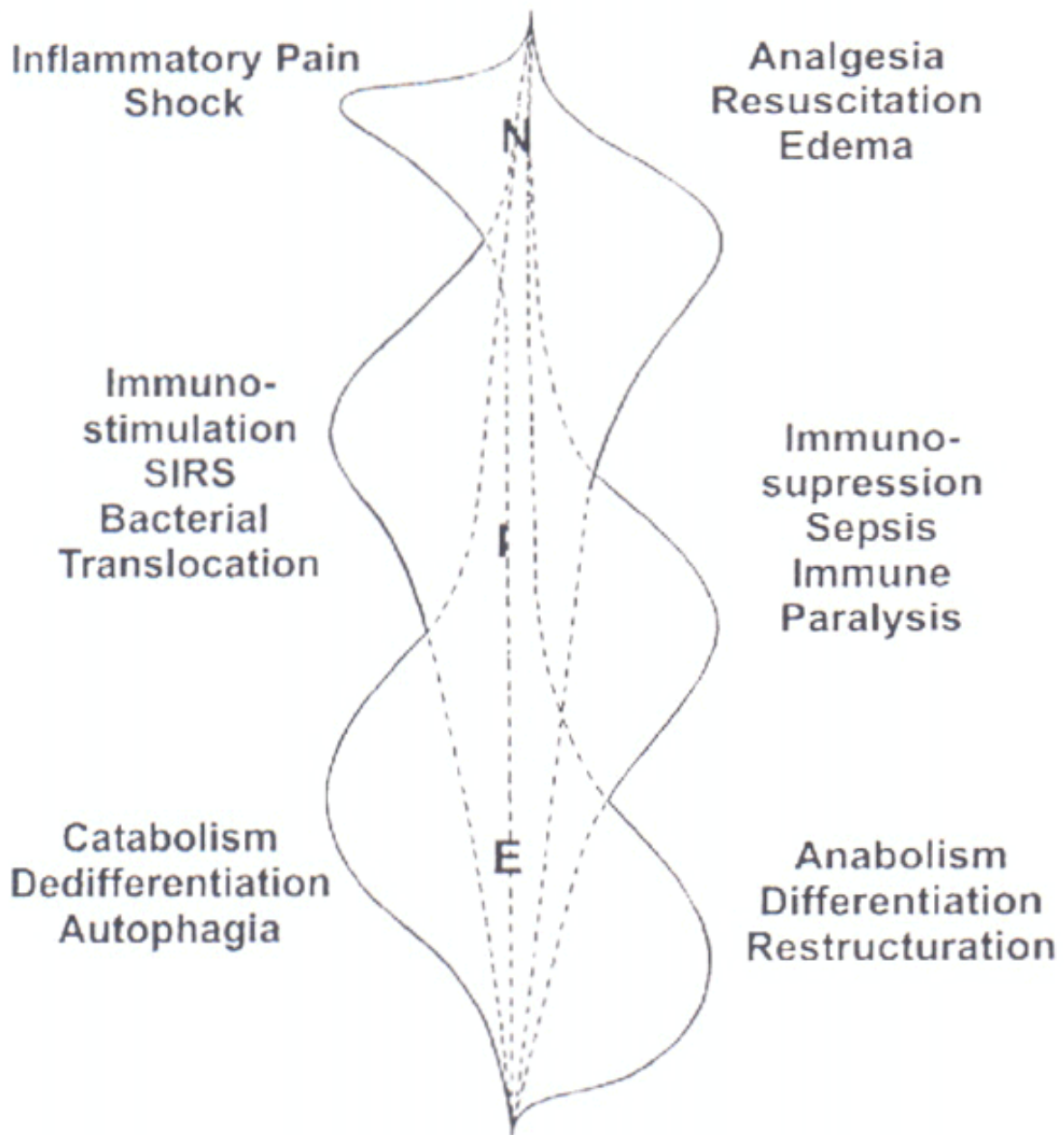


Figure 1. Posttraumatic inflammatory response. The succession of three functional systems that have the common feature of possessing a nutritional purpose would characterize this response to aggression by mechanical energy (ϵ_m). In the nervous functional system (N), the phenomenon of ischemia-revascularization secondary to arteriolar vasomotor activity (a) (vasoconstriction-vasodilatation) would produce interstitial edema and thus permit selective cellular nutrition by diffusion. In the immune functional system (I), the blood loses its characteristic of liquid tissue due to coagulation and digestion, both extracellular (enzymes) and intracellular (phagocytosis) debris and bacteria are produced by venular diapedesis (v) of the inflammatory cells, which may become intermediary cells of the nutrition of the injured tissue. In the endocrine functional system (E), finally, vessel-mediated nutrition develops, and angiogenesis originates the new capillary network (c), which permits both regeneration as well as healing.

CARDIAC ARREST CIRCULATORY ARREST



POST-TRAUMATIC STRESS DISORDER

Figure 2. Schematic representation of the systemic response to injury produced by mechanical energy. This response is successively performed by the nervous (N), immune (I), and endocrine (E) functional systems, in a nutritional sense. Normally, the N phase, with cardiovascular instability, lasts for days. Phase I generally occurs with infection or sepsis and generally lasts weeks, and phase E, which includes the convalescence period, lasts months, and post-traumatic stress disorder may be a complication. The incidence of factors that affect the evolution takes the response back to the initial phase (N) and would cause vasodilatory shock and circulatory arrest. SIRS; Systemic Inflammatory Response Syndrome.