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Transplantation and damage-associated molecular patterns

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Upon solid organ transplantation and during cancer immunotherapy, cellular stress responses result in the release of Damage-Associated Molecular Patterns (DAMPs). The various cellular stresses have been characterized in detail over the last decades, but a unifying classification based on clinically important aspects is lacking. Here, we provide an in-depth review of the most recent literature along with a unifying concept of the danger/injury model, suggest a classification of DAMPs and review the recently elaborated mechanisms that result in the emission of such factors. We further point out the differences in DAMP responses including the release following a heat shock pattern, endoplasmic reticulum stress, DNA damage-mediated DAMP release and discuss the diverse pathways of regulated necrosis in this respect. The understanding of various forms of DAMPs and the consequences of their different release patterns are prerequisite to associate serum markers of cellular stresses with clinical outcomes.

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