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Indirect lung injury predictive model in experimental trauma

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Abstract

Background: Trauma remains a medical-social problem, still having high lethality rate. Indirect lung injury (ILI) occurs in trauma due to systemic neutrophils activation and proteases release into primarily intact tissues. There are no data in the literature regarding ILI predictive models in trauma.
Material and methods: In the experimental study (19 traumatized male rabbits), the proteases, antiproteases and the pulmonary morphological changes, assessed according to the SAMCRS score (Semiquantitative Reflected Qualitative Changes Assessment Scale) were followed. There were used two statistical instruments – correlational analysis and multivariate linear regression.
Results: Initially, a correlational analysis between the values of the SAMCRS score and the proteases/ anti proteases was performed. The null hypothesis was rejected (F = 7.017, p = .002). The correlation coefficient of the predicted results and the real values of $SAMCRS_{lungs}$ was .854, the determination coefficient being .626. The final model included the following parameters: constant (B = 9.427; 95% CI 7.341, 11.513; p <.001); $\alpha 2\text{-macroglobulin}_0$ (B = -4.053; 95% Cl -6.350, -1.757; p = .002); $AEAMP_0$ (B = .002; 95% CI .000, .004; p = .075); $AEAMP_{24}$ (B = -. 006; 95% CI -.010, -.002; p = .003); $AECG_2$ (B = .081; 95% CI .040, .122; p = .001); AEE_0 (B = -. 026; 95% CI -.040, -.011; p = .002).
Conclusions: In this research, a predictive model for indirect lung injury in experimental trauma was developed, the predictors being some elements of the proteases/antiproteases system. This, in turn, allows the hypotheses emission regarding the pathophysiology, prophylaxis and treatment of ILI.
Key words: trauma, indirect lung injury, predictive model.

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