

## SHORT REPORT

# Analysis of plasma D-dimer concentration in patients with delayed pressure urticaria

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**Abstract****Background** Activation of fibrinolysis system has been observed in spontaneous urticaria.**Aim** To investigate the haemostatic activation in DPU, expressed by plasma D-dimer concentration, the index of active fibrinolysis.**Methods** Plasma D-dimer concentrations were measured in eight patients with pure DPU of varying severity as well as in 30 healthy subjects.**Results** The analysis of individual results indicated that three patients of the eight show D-dimer concentration higher than the upper limit of the normal range. All the patients had severe DPU and manifested extensive lesions. The remaining five milder cases showed values within the normal range.**Conclusions** Our analysis revealed that DPU patients may differ in their haemostatic activation state depending on severity of the disease. In severe DPU cases hyperfibrinolysis may occur, manifested by elevated plasma D-dimer concentration, probably as a consequence of the systemic inflammatory response.

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**Keywords**

D-dimer, delayed pressure urticaria, fibrinolysis

**Conflicts of interest**

None declared.

**Introduction**

Delayed pressure urticaria (DPU) is characterized by late appearance and prolonged duration of erythema, cutaneous/subcutaneous swelling and inflammatory infiltration elicited by pressure stimuli. The pathogenesis remains unclear.<sup>1</sup>

Haemostatic activation has been observed in acute and chronic urticaria (CU).<sup>2–6</sup> Asero *et al.* suggested that activation of coagulation is involved in the pathogenesis of chronic urticaria.<sup>3,7</sup> Thrombin and other products of coagulation/fibrinolysis cascade may play a key role in the urticarial processes, by both mast cell activation and increasing vascular permeability.<sup>8</sup> It has been reported that D-dimer concentration is associated with CU severity<sup>3</sup> and may prove useful when assessing the disease activity.<sup>4</sup> However, data regarding the behaviour of the system in physical urticaria are very scarce. Interestingly, it has been shown that platelet activation is increased in DPU patients,<sup>9</sup> and therefore it may be valuable to investigate further the behaviour of the blood coagu-

lation-fibrinolysis system in such a disorder. In this study plasma D-dimer concentration, the index of active fibrinolysis, was measured in patients with DPU of varying severity.

**Materials and methods**

Examination comprised eight subjects (five men and three women) of age range 28–43 years (mean 37 years) suffering from DPU. A diagnosis of pure DPU was made clinically, following careful recognition of the history and respective physical examination. The patients suffered from no concomitant illnesses or spontaneous urticaria. In three of eight patients the course of the illness was severe and they practically never ceased to show some urticarial lesions elicited even by slight pressure. On the examination day painful skin swelling and erythema were extensive, in two patients located throughout the back, the buttocks and the posterior surface of the thighs effecting from sitting on a chair, whereas one patient showed lesions on the buttocks, legs and trunks because of



In severe DPU cases, hyperfibrinolysis may occur, manifested by the elevated plasma D-dimer concentration. The haemostatic activation might depend on the extensivity and intensity of the inflammatory processes in such a disorder. Studies comprising a larger number of patients are required to confirm these findings.

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