Systemic capillary leak syndrome *

Síndrome de extravasamento capilar sistêmico

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Abstract: The systemic capillary leak syndrome is rare and caused by increased capillary permeability. Several etiologies are involved. In our Department of Dermatology the main one is unstable psoriasis. Several treatments are used and many are still under study. Our objective was to present this potentially fatal medical condition that occurs in our specialty.
Keywords: Capillary permeability; Fatal outcome; Psoriasis

Resumo: A síndrome de extravasamento capilar sistêmico é rara e causada por aumento da permeabilidade capilar. Várias etiologias estão envolvidas. No nosso serviço de Dermatologia, a principal é a psoríase instável. Diversos tratamentos são usados e muitos ainda estão em estudo. Nosso objetivo foi apresentar esta situação clínica potencialmente fatal que ocorre em nossa especialidade
Palavras-chave: Evolução fatal; Permeabilidade capilar; Psoríase

The systemic capillary leak syndrome is rare and it is caused by increased capillary permeability which causes accumulation of fluids and proteins into the interstitial or extravascular space with subsequent hypovolemic shock.[1] It is a serious condition and can be potentially fatal if not treated at the right time and with appropriate therapy. It is most prevalent between the fourth and fifth decades of life and both sexes are affected.[2] However, there are some reports in children.

Three forms of this syndrome are recognized:[3]

- Idiopathic: attacks last for days, reccur at regular intervals and have as triggering factors menstruation, sinus and allergy to pollen.[4] It is the most prevalent form.
- Associated with skin diseases: erythroderma and pustular psoriais;[5]
- Drug-induced: retinoids, granulocytes stimulating factor.[3]

The mechanism which leads to increase in capillary permeability is not yet established but several hypotheses have been suggested. They are:

- Endothelial damage is caused by cytokines, such as interleukins 2 and 6, interferon gamma and tumor necrosis factor alpha.[6]
- Leukotriene B4 plays a central role in capillary permeability and, in vitro, its increase was detected.[6]
- Components of serum from patients with the syndrome cause increase of reactive oxygen species which leads to apoptosis of endothelial cells
- Plasma concentration of vascular endothelial growth factor (V(EGF) is higher in patients with extensive skin disease and can act in the microvasculature to induce increased permeability. As an example, generalized pustular psoriasis is accompanied by pathological proteinuria and elevated plasma levels of VEGF, which is produced by psoriatic plaque. Increased renal vascular permeability is measured in laboratory as proteinuria.[7] There are reports of systemic capillary leak syndrome after the use of acitretin and its cause

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seems to be increased VEGF both by psoriatic plaque as well as by stimulating the transcription of its gene by etinoic acid.

Findings are characterized by 3 phases:

- Prodromal: flu-like symptoms, abdominal pain, nausea, dizziness 2 (idiopathic form).
- Acute: loss of water, electrolytes and proteins for the extravascular space, with edema, compartmental syndrome, weight gain, rash, itching, sweating, renal failure and hypovolemic shock. (Figures 1 e 2).[8]
- Late (plasma expansion): fluid returns to the intravascular space and it is responsible for causing acute pulmonary edema, respiratory distress syndrome in adults, pericardial effusion, cardiac tamponade and cardiogenic shock. Severe hypoxia associated with pulmonary congestion and normal cardiac function occurs. It is in this phase where the major complications that endanger patients'lives occur.[9]

Hypoalbuminaemia, neutrophilia, hemoconcentration with or without associated paraproteinemia are detected in laboratory tests.

Atkinson et al noted that up to 70% of the intravascular volume can spill during an episode.2 Therefore profound hypoalbuminaemia and hemoconcentration are present and limit the effectiveness of plasma expanders.

The systemic capillary leak syndrome has been reported as a complication of erythroderma which commonly arises from unstable psoriasis and is the main cause of leak syndrome in our service. Other causes of erythroderma are: drug eruptions and malignancies. Psoritiac erythroderma increases in 25 - 30% the daily loss of proteins, which may generate edema, muscular weekness and hypoalbuminaemia. There is compensatory hypermetabolism and increased basal metabolic rate. Accelerated blood flow may cause hypothermia which is intensified by heat evaporation through the dilated permeable cappilaries. This temperature change is kept due to the inability to respond with vasoconstriction and/or vasodilation. It can be fatal, especially in the elderly and in people who suffer from heart diseases.

Skin manifestations are diverse: purpuric lesions, subcutaneous infiltration, livedo, rash in sun-exposed areas, erythematous papules and they occur during the attacks in the idiopathic form. [10]

Cappilary leak occurs in infections (sepsis, dengue shock syndrome), hereditary angioedema caused by deficiency of C1 esterase, systemic mastocytosis, chemotherapy, malignancy and hemophagocytic syndrome and these should be discarged against new cases of shock with laboratory evidence of plasma extravasation. To characterize an idiopathic form it should also be discarded Carbon monoxide poisoning, maternal status of postpartum and pustular psoriasis.[2]

All cases require monitoring of serum protein and calcium and adequate hidroelectrolyte, haemodynamic and temperature balance. Premisses should have a nice and humidified temperature so as to avoid hypothermia and improve skin hydration. Appropriate nutrition and control of urea, creatinine and infections are important. Sedating antihistamines can be prescribed to relieve itching and reduce anxiety. Analysis of VEGF, still being studied, might be a useful predictor for clinical outcome and its handling.[7]

Different therapeutics such as immunoglobulin

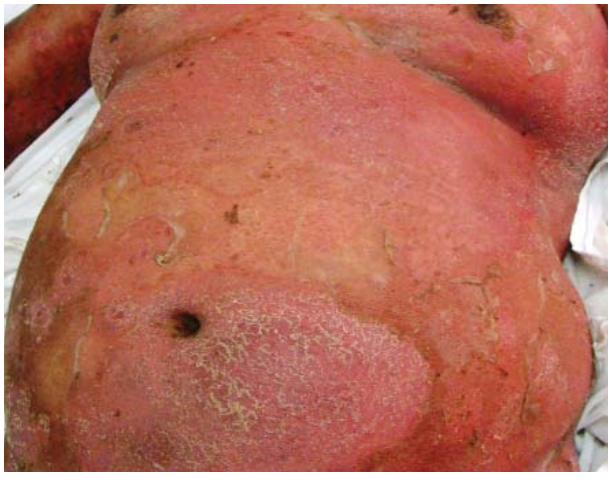

Figure 1: Important subcutaneous edema, with erythema and desquamation in patient previously suffering from psoriasis

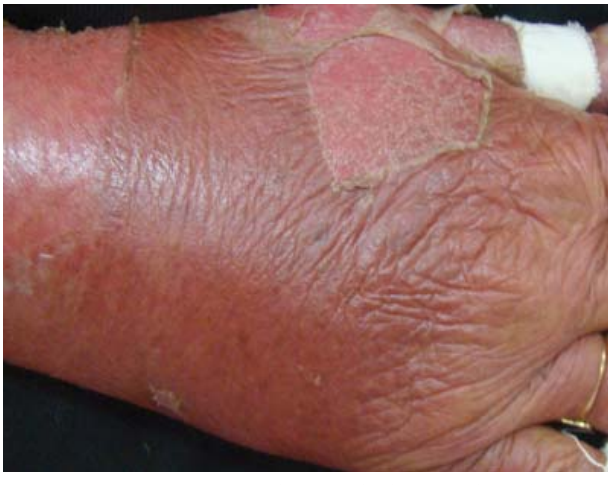

Figure 2: Desquamation, erythema and edema similar to burning

IV, theophylline, terbutaline, steroids (our option when the cause is unknown or when psoriasis is associated with acute respiratory distress syndrome or acute pulmonary edema), indomethacin, spironolactone, cyclosporine (our choice when the etiology is unstable psoriasis), plasmapheresis, prostacyclin, gingko biloba and pentastarch have been tried. Other options under study are: inhibition of apoptosis by anticaspases or antioxidants and inhibitory action on the vascular factor of endothelial growth or on pathways it mediates. ❑

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