The Editor's Choice

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Evaluation of the immune colloidal gold technique for BP180-NC16A-specific antibodies in the quick diagnosis and monitoring of bullous pemphigoid

Bullous pemphigoid (BP) mostly involves elderly patients. The diagnosis of BP requires special immunological tests, which makes some patients unable to be diagnosed and treated timely. Fan B et al evaluated the accuracy and application value of immune colloidal gold technique (ICGT) in BP. The colloidal gold was conjugated with recombinant BP180 NC16A protein and mouse IgG antibody. As the test and control lines, the mouse-anti-human IgG and goat-anti-mouse IgG, respectively, were blotted on the nitrocellulose membrane. Strong agreements between ICGT and ELISA (κ=0.902), and between plasma/whole blood and serum samples (κ=0.980) with good stability were observed. The ICGT achieved sensitivity of 93.9%, and specificity of 97.6%. In follow-up, BP patients who kept ICGT-negative in remission state all got consecutive positive strips 1 to 3 weeks prior to mild new activity or flare. ICGT shows high potential as a rapid and stable option for the diagnosis and monitoring of BP. Further investigations are needed to reevaluate this technique in a prospective study with a multicenter design.

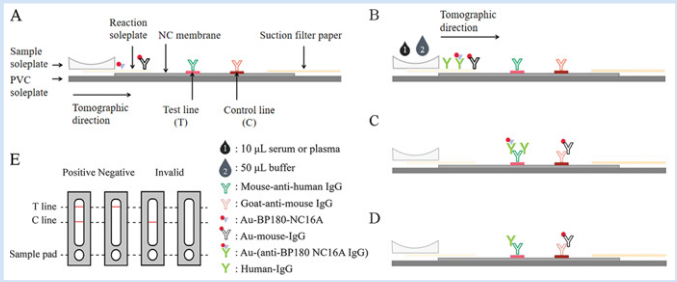

Fig. 1. The procedure and result interpretation of ICGT. A: The design of the rapid test kit for blood anti-BP180 NC16A antibodies detection. All the parts are housed in a plastic cassette. Colloidal gold-labeled recombinant BP180 NC16A antigen and mouse IgG antibody were on the reaction soleplate. The T line was painted on the NC membrane and covered by mouse anti-human IgG. The C line was covered by goat anti-mouse IgG antibody for quality control. B: After adding 10 μL serum or plasma and 50 μL buffer, staff could obtain the results in 15 min. C,D: The positive and negative results of the anti-BP180-NC16A antibody detection kit. E: A diagram of all possible results.

Cathepsin B/NLRP3/GSDMD axis-mediated macrophage pyroptosis induces inflammation and fibrosis in systemic sclerosis

Pyroptosis is a newly discovered type of programmed cell death associated with inflammatory and fibrotic diseases. Macrophages play an important role in inducing early immune inflammation in systemic sclerosis (SSc). Liu C et al investigated the effect of macrophages pyroptosis on fibrosis of SSc. Pyroptotic/inflammatory proteins, including NLRP3, Caspase (CASP)1, GSDMD-N terminal and IL-18 were increased in the serum, and ASC aggregation and GSDMD were elevated in macrophages in the skin of SSc patients. SSc mice showed increased pyroptosis markers, dermal thickness and collagen deposition in skins, which were alleviated by MCC950, Disulfiram, and NSA. Pyroptosis of THP-1 cells and BMDMs was induced by LPS/SiO2, and it was reduced by the inhibitors of Cathepsin B, NLRP3, CASP1 and GSDMD. Co-culture with pyroptotic THP-1 cells increased the fibrotic proteins in fibroblasts, which were alleviated by pyroptosis inhibitors. SSc patients and BLM-induced mouse model presented increased pyroptosis. LPS/SiO2-induced macrophage pyroptosis promoted fibrosis of SSc through Cathepsin B/NLRP3/GSDMD pathway.

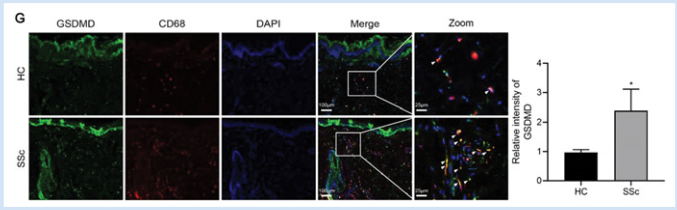

Fig. 1. Increased pyroptosis-related markers in sera and skin lesions of SSc patients. (G) in skin lesions of SSc patients and HCs (five random microscopical fields per section were chosen, n = 3 per group). Student's t-test was used to evaluate the statistical difference between SSc and HCs groups. * P < 0.05, * * P < 0.01 vs. HCs. HCs, healthy controls. n.s, not significant. mRSS, modified Rodnan skin score.

Integrative multi-omic analysis of radiation-induced skin injury reveals the alteration of fatty acid metabolism in early response of ionizing radiation

Radiation-induced skin injury is a serious concern during radiotherapy and accidental exposure to radiation. Tu W et al investigated the molecular events in early response to ionizing radiation of skin tissues and underlying mechanism. The integrated analysis of metabolomics and transcriptomics showed that 6 key fatty acid-associated metabolites, 9 key fatty acid-associated genes and multiple fatty acid-associated pathways were most obviously enriched and increased in the irradiated skins. Among them, acyl-CoA dehydrogenase very long chain (ACADVL) was investigated in greater detail due to its most obvious expression difference and significance in fatty acid metabolism. ScRNA-Seq of rat skin from irradiated individuals revealed that ACADVL was expressed in all subpopulations of skin tissues, with variations at different timepoints after radiation. Immunohistochemistry confirmed an increased ACADVL expression in the epidermis from human sample and various animal models, including monkeys, rats and mice. Cutaneous fatty acid metabolism was altered in the early response of ionizing radiation, and fatty acid metabolism-associated ACADVL is involved in radiation-induced cell death.

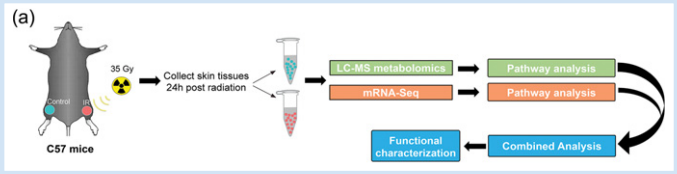

Fig. 1. The LC-MS metabolomics analysis of mice skin tissues between the control group and radiation group. (a) The procedures for LC-MS metabolomics and mRNA-Seq in early radiation-induced skin injury model. LC-MS metabolomics and mRNA-Seq were performed in the mice skin tissues, which were collected 24 h after 0 or 35 Gy of electron beam radiation.