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Frequency of circulating myeloid-derived suppressor cells in the Egyptian patients with chronic HCV infection

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Hepatitis C Virus (HCV) is epidemic in Egypt and causes chronic hepatitis. The failure of HCV patients of IFN-α-based therapy is often associates with suppression of immunity. Because we found in our recent studies a positive correlation between high numbers of myeloid derived suppressor cells (MDSCs) and suppressed immunity in cancer, we aimed to assess the frequency of these cells in chronic HCV patients and correlate it with the responses of the patients to IFN-α-bases therapy. To this end, peripheral blood was drawn from 80 patients with chronic HCV infection (mean age = 41.5 ± 6.51 years; male/female: 60/20) and from10 healthy volunteers (mean age = 28.5 ± 3.81 years; male/female: 8/2). The study was conducted from January 2011 to February 2014. The patients were categorized into responders and non-responders based on viral titer and the clinical data was collected and analyzed for each patient. Frequency of the cells was assessed by flow cytometry and IL-2 was assessed by ELISA. We defined MDSC population as Lin-/HLA-DR-/CD33+/CD11b+. We also found increases in the frequency of MDSC. The high levels of MDSC was associated with increases in the frequency of DCs and T cells (CD4+ and CD8+) , as well as with the differential count of lymphocytes, and monocytes. It was associated, however, with decreases in the total numbers of the total number of white blood cells, granulocytes, and platelets in all IFN-α responders and non-responders when compared with healthy donors. Interestingly, the frequencies of MDSC and DCs in IFN-α- responders were lower than in those in non-responders. More interestingly, the levels of MDSC measured 4-6 months of IFN-a treatment of responders was much lower than those during treatment. We found that there was no correlation between MDSCs, and the liver enzymes AST and ALT. Our data conclude that chronic HCV patients showed high levels of MDSCs regardless IFN-a therapy. The responders have the tendency of lower MDSC levels than non-responders. MDSCs can use as biomarker of responsiveness to IFN-based therapy. As such, identifying novel effective therapeutic that can target MDSCs would improve clinical outcomes in HCV patients.

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