Combining chemotherapy and low-molecular-weight heparin for the treatment of advanced breast cancer: results on clinical response, transforming growth factor-beta 1 and fibrin monomer in a phase II study

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Coagulation activation appears to play a role in tumor progression. Low-molecular-weight heparin (LMWH) may influence tumor growth and LMWHs have been shown to beneficially influence tumor response to chemotherapy. In a phase II study using docetaxel plus enoxaparin in 25 patients with advanced breast cancer, fibrin monomer, transforming growth factor-beta 1 (TGF-beta (1)) and response rates were evaluated. Enoxaparin was administered at a daily dose of 0, 5 or 1.0 mg/kg and docetaxel at 35-45 mg/m² on a weekly basis. Nine patients achieved a partial response (36%) and nine patients (36%) had stable disease. The median time to progression was 11.5 weeks (range 5-51 weeks), and 16 weeks combining patients with partial remission and stable disease. One major bleed occurred. Patients with partial remission had a significant decrease of TGF-beta(1) and fibrin (P < 0.05). A significant correlation between TGF-beta(1) and fibrin monomer was also seen in all subgroups independent of clinical response. The most frequent toxicities were granulocytopenia, asthenia, transient peripheral edema and temporary hot flushes. In conclusion, docetaxel plus enoxaparin was quite active and well tolerated in patients with advanced breast cancer. These preliminary data suggest further clinical research using chemotherapy plus enoxaparin as an antitumor therapy in advanced breast cancer is warranted.

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