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# Speed selection in the model of infiltrative tumour growth with account of migration-proliferation dichotomy

A mathematical model of infiltrative tumour growth taking into account transitions between two possible states of malignant cells: proliferating and migrating, is developed. These transitions are considered to depend on oxygen level in a threshold manner: high oxygen concentration allows cell proliferation, while concentration below a certain critical value induces cell migration. Whenever a moving cell reaches the domain with high oxygen level it recruits into proliferation, otherwise it necrotizes.

It is demonstrated that model solution for localized initial tumour cell distribution tends to autowave solution. We investigate mechanism of autowave speed selection in the model with migration-proliferation dichotomy and compare results obtained with that for Kolmogorov-Petrovskii-Piskunov and Fisher (**KPP-F**) equations. It is known that in **KPP-F** equations speed is defined by asymptotics at leading edge of autowave (pulled regime). It is demonstrated that in the model considered autowave speed is determined by falling edge (pushed regime). The dependence of tumour spreading rate on model parameters is obtained. It is shown that the spreading rate depends on the oxygen level in tissue in a threshold manner.

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