Cancer cells more or less differ from cells of tumor origin. Cancer cells nucleus has undergone chromatin structure condensation and shape and also there are exchanged nucleolus volume and staining properties. Nevertheless it is suggested that cancer stem cells are responsible for resistance to anticancer treatment and tumour recurrence. There are various cell surface and nucleus antigens to identify cancer stem cells. For example CD44, CD24 and ALDH are known as breast cancer stem cell biological markers.

**THE AIM OF THE STUDY** is to determine cancer cell resistance, cell population heterogeneity and amount of DNA in luminal and triple negative breast cancer cell population using paraffin sections. It is necessary to find new criteria to estimate the efficiency of anticancer therapy.

**MATERIAL AND METHODS**

In two types of breast cancer- triple negative (n=11) and luminal (n=32) the CD44, CD24, and ALDH antigen expression were studied to evaluate cancer stem cell amount in population. Antigen expression was estimated immunohistochemically in paraffin sections by semi-quantitative method. In addition, both types of cancer histological samples were stained by Feulgen method to measure DNA amount in the cancer cell nuclei. HeLa cell culture was transfected with plasmid pGFP-N3 containing GFP gene.

**RESULTS**

The CD44 and ALDH expression was higher in triple negative breast cancer than in luminal breast cancer. We observed CD24 antigen expression in two cell types- in large- polyploid cells (with size 10-20µm) and in small cells- microcells (with size ~9µm). In both types of breast cancer we observed polyploid cells and microcells with phenotypes CD44+/CD24-/ALDH+ and CD44+/CD24+/ALDH+. According to these studies we conclude, that the luminal breast cancer small cell population contain cells with low and high DNA concentration, but large cells exhibit only low DNA concentration. In triple negative breast cancer cell population small and large cells contain high and low concentration of DNA.

In transfection experiments with HeLa cells we observed the GFP expression in microcells and little bit later in large cells after UV irradiation.

**CONCLUSION**

Based on this study, it seems that development and behaviour of microcells and polyploid cells are similar, but polyploid cells are in later developing phase after anticancer treatment. Consequently, our study suggested that both small and large cells with high concentration of DNA could be responsible for resistance but small cells could be resistant cell population progenitor.

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