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Letter to the Editor

Smudge cells: Very old history and new conclusions

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I read with great interest of the paper published by Johansson et al. [1]. They showed the prognostic/predictive importance of smudge cells in peripheral blood smear taken from cases with chronic lymphocytic leukemia (CLL).

The smudge cell (SC) is interesting biologic phenomenon in CLL cells: these are apoptotic cells dying in circulation and are indicator of a process of auto-suicide. Last year and three years ago Nowakovski et al. showed that patients who have high number of SCs in peripheral blood smear had better prognostic indicators and lived longer than others [2,3]. The story of SC is very long and interesting: Firstly it has been suggested as an artifact in the peripheral blood during slide preparation due to the fragility of the cells [4,5]. This important observation coming from 1896 found the biologic definition with papers reported by Johansson and Nowakoski [1–3]. Nowakoski et al. found a relation with SCs and vimentin which is an important cytoskeleton protein and responsible from rigidity and/or integrity of the cells. It is known that vimentin has a role in cell activation and signal transduction [6]. Although there are two important differences for cut off points and vimentin expression of SCs between two authors, prognostic importance of SCs have been stressed in both papers. Can we make an analogy at this point: we know that sickled cells have a high rate of rigidity and can not pass the arteriolar level and cause tissue injury and hypoxia. Are the rigid cells in CLL cause more malignant clone and resistant disease? At this point critical question is: why these cells are ruptured? All the unruptured cells have ZAP70 and/or CD38 expression causing signal transduction or vice versa. Johansson and Nowakoski showed inverse relation with SC percentage and ZAP70/CD38 which are two important poor prognostic indicators. This original finding corresponded to the biologic basis of higher number of SCs and better clinical outcome in CLL cases. SC percentage was found to be an independent predictor of overall survival both in multivariate and univariate analyses and authors suggested the SC percentage for risk stratification in addition to the other biologic parameters. These papers are very important. Because they showed that highest percentage of SCs was found to be the most important indicator for the live of the case and death of the of the malignant lymphocyte. Although this finding needs validation in other studies, now this is a very important and practical point for clinicians and also scientists who would like to study the biology of CLL.

On the other hand can we make another comment for the occurrence of SC. Fifteen years ago I noticed the ruptured or SCs in cases with T cell acute lymphoblastic leukemia (T-ALL) and then I reported this finding in 15 cases with T-ALL [7]. Then, I speculated the relationship between the rupture of the malignant cells and CD5 expression which is expressed both in CLL and T-ALL. We know that T-ALL is a unique entity with good response to treatment as compared with B-ALL. Perhaps cytoskeleton protein vimentin may have a role in this process.

Conflict of interest statement

None to declare.

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None.
Contributions. SP wrote the paper.

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