Journal scan

Protein induced by Vitamin K absence II as a potential serological biomarker in pancreatic cancer: a pilot study

Pancreatic cancer (PC) is the 13th most frequent malignancy and is the fourth cause of cancer-related death worldwide. The survival rate in these patients is dependent on early identification with a 25% survival reported in patients diagnosed in Stage I. However, more than 80% of patients are diagnosed in an advanced or metastatic stage when the 5-year survival rate is only 2%. The currently used tumour markers in PC are cancer antigens (CA) 19–9, CA 242 and carcinoembryonic antigen (CEA), which are sensitive, but lack specificity. This highlights the need for biomarkers which could be of help in early detection of PC. In this study, the authors studied protein induced by Vitamin K absence II (PIVKA-II) in patients with PC. PIVKA-II is an abnormal prothrombin increased in gastrointestinal malignancy. PIVKA-II was found to be significantly higher in PC compared to patients with benign pancreatic diseases. PIVKA-II showed a good diagnostic performance with area under the curve of 0.86 compared to 0.58, 0.73 and 0.64 for CA 19–9, CA 242 and CEA, thus showing the usefulness of this biomarker in the management of patients with PC.

COMMENT

The current study could be a step forward in the quest for finding early biomarkers for PC. Although the currently used tumour markers such as CA 19–9, CA242 and CEA lack specificity, the sensitivity is often increased by the use of a combination of markers. This study shows the usefulness of PIVKA-II for the diagnosis of PC as well as for differentiating it from benign lesions. Since the sample size used was very small (n = 26), the findings of this study need to be validated in a larger study.

Tartaglione S, Pecorella I, Zarrillo SR, Granato T, Viggiani V, Manganaro L, *et al.* Protein induced by vitamin K absence II (PIVKA-II) as a potential serological biomarker in pancreatic cancer: A pilot study. Biochem Med (Zagreb) 2019;29: 020707.

Parameters for validating a hospital pneumatic tube system

As a part of automation in the preanalytical phase, pneumatic tube systems (PTSs) are used in hospitals to transport samples faster and in an efficient manner. However, PTSs induce physical stress which can lead to the lysis of samples, thus affecting the results of parameters such as lactate dehydrogenase (LD) and potassium (K+). However, there is no consensus on the evaluation of the efficiency and impact of PTSs on clinical chemistry parameter results. In this study, the authors compared two accelerometers and evaluated multiple PTS routes. They assessed the variability in PTS forces over the same routes. Further, response curves were generated to study the relationship between the number and magnitude of accelerations on parameters such as plasma LD, haemolysis index and K+ in PTS-transported blood from volunteers. The authors further used the extrapolations from these relationships to predict PTS routes which could produce false laboratory results. Measurements were made using a PCE-VD3 3-axis acceleration monitor (PCE Instruments) or an iPhone 6s (Apple) utilizing the Google Science Journal app. The maximum recorded g-force was 10 g for the smartphone and 22 g for the data logger. Day-to-day variation in the magnitude of accelerations ranged from 4%–39% within a single route. The relationship data revealed that 2 PTS routes predicted and increase in LD by ≥20%.

COMMENT

This study shows the importance of addressing preanalytical factors which could affect the patient's results adversely. In this case, the sample transport in hospital. Hence, what may be considered as a 'safe' method of transport could actually have an effect in accurate reporting of test results. Hence, the validation of PTS should be considered by hospitals to avoid erroneous reporting of test results. Although the authors have reported the effect on only three parameters, further studies focussing on other parameters should also be taken up for validating the efficiency of PTSs.

Farnsworth CW, Webber DM, Krekeler JA, Budelier MM, Bartlett NL, Gronowski AM, *et al.* Parameters for validating a hospital pneumatic tube system. Clin Chem 2019;65:694-702.

Ultra-Rapid Reporting of GENomic Targets clinical next-generation sequencing results within 48 h of sample collection

Molecular markers find a place as diagnostic markers in the 2017 World Health Organisation classification of myeloid neoplasms, especially acute myeloid leukaemia, myelodysplastic syndromes and myeloproliferative neoplasms. These markers have found a place in diagnosis, classification, risk stratification and treatment decisions in such neoplasms. While next-generation sequencing (NGS)-based mutation panels' profile allows multiple gene profiling simultaneously, it has one major drawback, i.e., the turnaround time (TAT). It is often longer than that required for single-gene tests. The authors have focussed primarily on this drawback and developed a novel Ultra-rapid Reporting of GENomic Targets (URGENTseq) which allows the results on fresh peripheral blood and bone marrow samples to be available within 48 h. The authors studied selected genes in haematologic malignancies which are useful for immediate diagnosis (CALR, CSF3R, JAK2, KRAS, MPL, NPM1, NRAS and SF3B1) and treatment decisions (IDH1 and IDH2) using this novel platform. They found a 100% concordance in the findings using this method when compared to the conventional NGS-based sequencing methods.

COMMENT

The URGENTseq real-time NGS platform thus allows faster diagnosis and treatment decisions for improved patient care and satisfaction. This novel platform can thus be useful in getting patient results for biomarkers much faster than before which would help in timely decision-making with respect to the diagnosis and treatment to be initiated in these patients and thus lead to better patient outcomes. The TAT for this assay being very less further shows hope of including these into routine patient care such as other pathological investigations.

Patel KP, Ruiz-Cordero R, Chen W, Routbort MJ, Floyd K, Rodriguez S, *et al.* Ultra-rapid reporting of GENomic targets (URGENTseq): Clinical next-generation sequencing results within 48 hours of sample collection. J Mol Diagn 2019;21:89-98.

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V. Suresh, A. R. Bitla

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