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Abionic Webinar - Advancing the Diagnosis of Sepsis in the Intensive Care Units

Real world evidence on the practical implementation of the Pancreatic Stone Protein (PSP) Sepsis Test

On the 22nd of September, attendees tuned in to a lively discussion on sepsis chaired by Professor Pedro Póvoa, who is currently coordinator of the Intensive Care Unit (ICU) in one of the largest hospitals in Lisbon and who is no stranger to the topic of biomarkers in sepsis himself.

Joining him from Portugal, Italy and Greece, a panel of 3 expert Physicians shared insights and details on how the Pancreatic Stone Protein (PSP) biomarker has been incorporated into their clinical practice, and how they are using it not only for the diagnosis of sepsis, but also to support their decisions to administer antibiotics or not.

The PSP sepsis test is a point-of-care diagnostic test that measures the concentration of the Pancreatic Stone Protein (PSP) biomarker in blood, an accurate and promising biomarker to aid in the early recognition of nosocomial sepsis in adults.

Prof. Póvoa reminded the audience of the importance of identifying and **“treating the true positive cases and finding the patients with infection among all the others. Because [...] the false negatives, have an increased risk of death due to delayed therapy.”**

In parallel, he also highlighted that **“there is a problem of over-diagnosis in patients who appear to have sepsis but do not, leading to an increased use of resources, delayed therapy of the underlying disease that is simulating sepsis, and increased antimicrobial resistance.”**

Addressing these issues, Doctor João Pereira uses the PSP test in those patients where he is unsure of the underlying condition, and in difficult cases to improve the certainty of his clinical decisions.

“In patients who we suspected as having an infection but weren’t sure, 82% of the PSP values were high (> 250 ng/ml), and in half of the cases, very high (≥ 600 ng/ml). Looking closer, we noted that these patients had an infection that needed to be controlled (mostly cholangitis), and when we controlled the focus of the infection, the PSP decreased rapidly, and the patient really improved.”

Avoiding the misuse of antibiotics and tailoring the treatment to individual patients is important. As Dr. Pereira mentioned, **“a typical clinical picture during the ICU stay is that of the patient with small increases in C-reactive protein (CRP), fever and worsening oxygenation, and we need to know if this patient has an infection or not. In one third of our determinations, PSP was below the 200 ng/ml cut-off, and despite the suspicion of infection, this biomarker helped us decide against the use of antibiotics in several patients”**

Having biomarker results available at the point-of-care and with a total turnaround time of a few minutes, is crucial in these situations.

Prof. Giuseppe Castellano, from the department of Nephrology, Dialysis and Renal Transplantation at the Policlinico Hospital of Milan stressed the increased vulnerability of patients with COVID-19 and acute kidney injury (AKI).

Kidney injury represent **“In April 2020, we found AKI to be present in 30% of patients with COVID-19. This high incidence is due to complex disease mechanisms including vascular consequences of SARS-CoV-2 induced coagulopathy with activation of the complement system, cytokine elevation, and kidney invasion in proximal tubular cells and podocytes. Leading to multiple organ dysfunction and the need for ICU admission. ”**

PSP was measured in patients admitted to Prof. Castellano’s unit with kidney failure at different levels of disease severity, and even though **“these are preliminary results, we see a trend for PSP to increase along with the severity of the disease. PSP was also significantly higher in patients who died, correlating with what is known from literature.”**

Speaking from the suburbs of the Greek capital in Athens, Dr. Maria Petraki discussed the value of personalising treatments for each patient. Using the most innovative technology available to them, they implemented the abioSCOPE device to support the management of their patients at risk of sepsis.

“Most of our staff have been trained to be able to run PSP when it is needed. It provides actionable results and is very important that we can instantly get the results when we see severe changes in the patients’ clinical image.”

“We are now starting earlier treatment in our patients with sepsis, with remarkable results in the overall management of the patients and the outcome of their stay in our ICU.”

Dr Petraki spoke about the importance of having a solution that is financially feasible. **“I work in a private hospital and always need to think of cost-benefit medicine, and we have seen that the early diagnosis of sepsis is a good cost-saving tactic in our hospital.”**

Biomarkers are only useful when they can provide additional value to the physician. Situations where the diagnosis is already clinically obvious, do not require further biomarker measurements. As Dr. Petraki comments in her recent experience: **“In the past week, I had two patients with ventilator associated pneumonia (VAP) where PSP was extremely high, > 600 ng/ml. But it was already clinically obvious that these patients had VAP. I’ve found in my experience, that it’s in the grey zone where PSP is useful, when it’s unclear whether or not a patient has an infection that is about to get septic. It usually helps me a lot […] when I see it increase from one day to the next, meaning that something is about to happen.”**

When talking about when to perform a PSP test, and the frequency of testing, Dr. Petraki says that they usually measure **“PSP during rounds in the ICU, when a patient isn’t doing well. Not doing well in the ICU means that the patient is not improving: oxygenation is getting worse, blood pressure is decreasing (but is not low enough to be a shock), white blood cell count is going up (but not enough to signal an infection). This is when we take the decision to proceed with a PSP determination. We always ensure to do a second measurement 48 hours later to see how things are going. If PSP is positive, we take action, we escalate antibiotics and we proceed with additional tests to find the source.”**

Overall, the speakers shared their experiences and practices with the rapid PSP test on the abioSCOPE in-vitro diagnostic device in their corresponding hospital units and reminded us of the ‘smart’ use of biomarkers to improve hospital care. From anticipating the onset of sepsis, to tailoring the use of antibiotics and predicting disease severity, the PSP test has shown remarkably promising results in real life situations, meeting important clinical needs and hopefully paving the way towards more personalized diagnostic medicine in the future.

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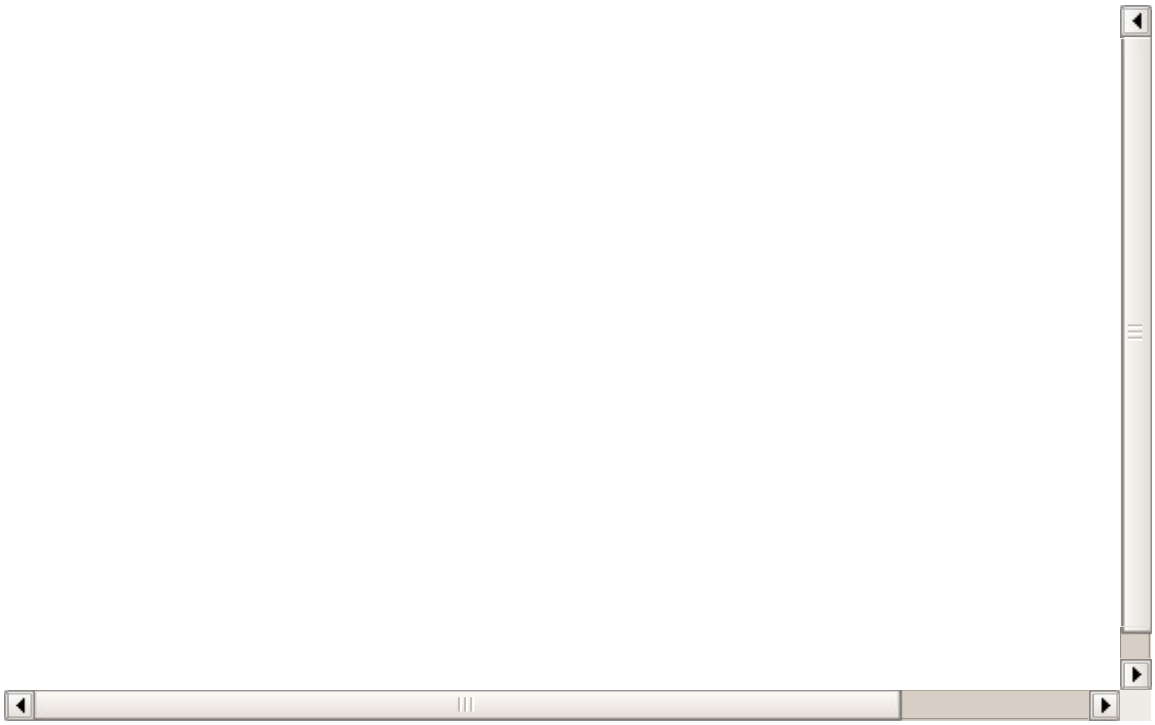

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