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Relative Value Of Serum Amylase After Pancreaticoduodenectomy As A Novel Predictor Of Clinically Relevant Pancreatic Fistula

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Background : Postoperative serum amylase is an important factor to predict clinically relevant postoperative pancreatic fistula (CR-POPF). However, various reference serum amylase (SA) values have been used in previous studies. Therefore, this study aimed to suggest the effective method to predict CR-POPF by comparing the absolute and relative value of SA after pancreaticoduodenectomy.

Methods : Data from 143 patients who underwent pancreaticoduodenectomy between January 2019 and January 2021 were analyzed. In order to adjust a different baseline SA value for each patient, the concept of relative value of SA was introduced. Absolute SA, the ratio of SA on POD1 versus POD3 (POD1/3 SA), and POD1 versus POD5 (POD1/5 SA) were used to calculate the area under the curve (AUC), sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) on CR-POPF prediction.

Results : A total of 26 of 143 patients (18.2%) developed CR-POPF. The relative value of SA showed higher AUC than absolute SA value on POD1, especially POD1/5 SA having the highest AUC value (POD1/5 SA 0.818; POD1/3 SA 0.753; POD1 SA 0.703). 23 of 65 patients (35.4%) whose POD1 SA value was over 6 times than POD5 SA value developed CR-POPF ($p<0.001$). And in the case of these patients (POD1/5 SA $>$ 6) showed the most accurate risk prediction for CR-POPF (sensitivity 88.5%, specificity 62.2%, PPV 35.4%, NPV 95.8% $p < 0.001$).

Conclusions : Baseline SA levels may vary from patient to patient. Relative SA values have better performance to predict CR-POPF than absolute SA.

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