The influence of the temperature of the dialysate on hyperglycemia during Hyperthermic Intraperitoneal Chemoperfusion (HIPEC) with Oxaliplatin.

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Introduction :

Surgical debulking with perioperative Hyperthermic Intraperitoneal Chemoperfusion (HIPEC) is an established treatment option in selected patients with peritoneal carcinomatosis. When oxaliplatin is used as the chemotherapeutic drug, patients develop a metabolic disorder with severe hyponatremia , hyperglycemia and hyperlactatemia (1). The exact pathogenesis of the hyperglycemia is not entirely understood in the context of complex peritoneal transport after extensive surgical trauma (2) and changing perioperative glucose handling of the body (3). But as Perioperative hyperglycemia is associated with worse outcome.(3) we wanted to test the hypothesis that the temperature of the dialysate has an influence on the hyperglycemia, one of the driving factors of this clinical picture.

Materials and Methods :

Between july 2005 and june 2010, 118 patients were treated with oxaliplatin based HIPEC in our tertiary centre. During the 30minute perfusion, temperature was continuously recorded at 3 sites. Repeated bloodgas analysis was performed at the start (t0), at 15 minutes (t15) and at the end of the perfusion (t30). Patient charts were analyzed and demographic data were included in the analysis. A stepwise multiple regression analysis was performed to predict the glycemia at t15 and t30.

Results:

At t15 and t30 a weak but significant model could be constructed. After 15 minutes two factors were withheld by the model; the glycemia at the beginning of the perfusion and maximum temperature during this period. At the end of the perfusion, t30 only the glycemia at the beginning of the HIPEC was an independent variable. Full reports of the two analysis are given in table 1 and table 2

Table 1: Multiple regression analysis report at t15
R^2 adjusted = 0,118; $F_{(2,107)}$ = 8,31 ; $p < 0,001$; constant coefficient: -590,00

Independent variable	β	Stand Err	P –value
Glycemia at t0	0,60	0,20	0,003
Maximal temperature after 15 minutes	20,37	7,28	0,006

Not included in the model
  BMI
  Gender			

Table 2: Multiple regression analysis report at t30:
R^2 adjusted = 0,111 ; $F_{(1,106)}$ = 13,25 ; $p < 0,001$; constanf coefficient = 275,79

Independent variable	β	Stand Err	P-value
Glycemia t0	0,73	0,20	0,0004

Not included in the model
  Maximal temp t30
  BMI
  Gender			

Discussion:

Our data show that the temperature of the dialysate intensifies the hyperglycemia seen during the initial phase of HIPEC.

References:

1. De Somer et al Perit Dial Int 2008;28(1): 61-66
2. Flessner MF et al. J Am Soc Nephrol. 1991;2:122-135
3. Akhatar S et al Anesth Analg 2010; 110: 478-497