Indocyanine green elimination measurement may detect surgical complications following major liver resection. Preliminary results.

*Ll.Alarcón Pérez, P. Bono Chaure, J. Narváez Salazar, L. Olmedilla, JM Pérez-Peña, P. Duque González
Hospital General Universitario Gregorio Marañón, Madrid*

Background and Goal of Study:

Indocyanine green elimination by pulse spectrophotometry is a non-invasive liver function monitoring system. The aim of this study is to assess the relationship between postoperative ICG plasma disappearance rate (ICG PDR % min) and the onset of surgical complications postoperatorias.

Materials and Methods:

This study is registered in ClinicalTrials.gov under the number NCT02813538. 22 patients scheduled for mayor liver resection were selected. ICG PDR was measured preoperatively and on the day 1 and 2 postoperatively. We considered liver ischemia, biliary leak and intra-abdominal fluid collections as postoperative surgical complications.

Results and Discussion:

6 patients have undergone surgical complications. The median ICG PDR was 17.2 ± 7.7 preoperatively, 16.96 ± 7.75 on postoperative day 1 and 16.24 ± 7.91 on postoperative day 2. Significant association was found between lower ICG PDR measurement taken on postoperative day 1 and the onset of surgical complications ($11,3 \pm 5.9$ in patients with surgical complications vs 18 ± 7.14 in patients without surgical complications, $p=0.017$). We have also found a significant correlation between ICG PDR measurement taken on postoperative day 1 and hospital stay ($r=0.43$, $p=0.044$).

Conclusions:

ICG PDR measured by pulse spectrophotometry is a useful non-invasive liver function test in patients undergoing major liver resection. It may predict surgical complications in these patients which could improve their management and as a consequence their outcome.

References:
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