**Presenter:** Yoshihisa Tsuji  
**Title of Abstract:** Prediction of pancreatic necrosis in early stage of acute pancreatitis using subtraction color map images created from contrast-enhanced and unenhanced CT.  
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**Modality:** CT  
**Organ System:** GI  
**Purpose:** To investigate the usefulness of subtraction color map images from contrast-enhanced (CE) and unenhanced (NC)-CT for diagnosis of pancreatic necrosis (PN) in the early stage of acute pancreatitis.  
**Methods Used:** 48 patients who had NC-CT and CE-CT within 3 days from the onset of acute pancreatitis were included. CE-CT included hepatic phase only (n=48) or both pancreatic phase and hepatic phase (n=39). Subtraction (CE-CT - NC-CT) color map images were created for pancreatic and hepatic phases after 3D registration using prototype software. Enhancement of 18 HU and 20 HU or less is coded with the color purple for pancreatic and hepatic phase, respectively, which was used as threshold for diagnosis of PN. Three independent radiologists reviewed the CT images in the following sequence: CE-CT only, NC-CT + CE-CT, subtraction color map images + CE-CT. Reviewers evaluated for the presence of PN using a 5-point confidence scale for each image set. The standard of reference for development of PN was follow-up CT or MR performed at 1 week or later. When the patient was discharged from hospital within 1 week without a CT or MR, PN was considered absent. Sensitivity, specificity, accuracy, and the area under the ROC curve (AUC) for diagnosis of PN were calculated for each image set using confidence level of 3 or greater as a threshold. Accuracy was compared between subtraction color map images + CE-CT versus CE-CT alone or NC-CT + CE-CT.  
**Results of Abstract:** Of 48 patients, 11 had pancreatic necrosis. Sensitivity, specificity, accuracy and AUC for predicting PN were 83.3%, 80.0%, 80.7%, 0.93 for CE-CT only, 91.7%, 80.0%, 82.5%, 0.95 for NC-CT + CE-CT and 100.0%, 91.9%, 93.8%, 0.99 for subtraction color map images for reviewer 1, 87.5%, 81.8%, 89.2%, 0.96 for CE-CT only, 87.5%, 81.8%, 89.2%, 0.96 for NC-CT + CE-CT and 100.0%, 100.0%, 100.0%, 1.0 for subtraction color map images for reviewer 2, and 72.7%, 86.5%, 83.3%, 0.90 for CE-CT only, 72.7%, 86.5%, 83.3%, 0.92 for NC-CT + CE-CT and 81.8%, 91.9%, 89.6%, 0.96 for subtraction color map images for reviewer 3. Comparing NC-CT + CE-CT, the accuracy of subtraction color map images was significantly higher (p<0.05) for reviewer 1 and 2 but not significantly different (p=0.37) for reviewer 3.  
**Discussion:** Subtraction color map images created from CE-CT and NC-CT are useful in the diagnosis of PN in the early stage of acute pancreatitis.  
**Scientific and/or Clinical Significance?** For the diagnosis of PN in early stage of acute pancreatitis, both NC-CT and CE-CT are necessary. The addition of subtraction color map images can further improve diagnostic accuracy.  
**Relationship to existing work** Using advanced scientific method (sub-color map technique), development of pancreatic necrosis could be predicted in our study.