

Minutes of MRI Working Group meeting on Monday 2nd of November 2020, Zoom Meeting

1. Welcome (Christoph Schramm)

Apologies from Kidist Yimam (working on CCA screening methods) and Emmanuel Selvaraj (working on two projects: 1) Biliary dilation metrics as potential marker of disease severity from a prospective study. Requires validation with outcomes. 2) Potential application of periductal cT1 in the early diagnosis of PSC.), Ansgar Lohse und Roman Zenouzi.

2. Updates on ongoing projects and new study proposals (around 10 min each)

A. Cholangiocarcinoma in PSC

- European Cholangiocarcinoma MRI Registry (Vincenzo Cardinale and Marco Rengo)
 - ➔ CT based CCA database focusing on lesion detection and correlation of MRI with CCA histology
- Use of contrast in MRI in PSC for diagnosis and surveillance (Emina Halilbasic)
 - ➔ Presentation of gadolinium deposits in brain, mainly from MS and cancer patients, discussion whether that is relevant in PSC, further discussion needed in working subgroup (brain scans in PSC possible, requirement of contrast for surveillance)
- Comparative diagnostic performances of MRI versus ultrasound in early perihilar CCA detection in PSC & impact of MRI cancer detection on outcomes (John Eaton)
 - ➔ Presentation of results, manuscript accepted, sensitivity of MRI better than ultrasound (without contrast) for detection of early CCA lesions, better outcome of surveillance patients (published: Hepatology. 2020 Sep 25. doi: 10.1002/hep.31575. Online ahead of print.)
- Study of the effect of different surveillance strategies for survival in patients with PSC (Annika Bergquist)
 - ➔ Collected over 2000 cases, mainly large duct PSC, median follow up of 8 years. Patients with no surveillance show impaired survival rates, after diagnosis of cancer: better survival in the surveillance group. Manuscript has been circulated and is being revised.

B. MRI & non-malignant diagnostics

- Detection of small duct PSC on MRI (Kristina Ringe)
 - ➔ high number of patients had to be excluded due to macroscopic changes of the bile ducts after careful revision, after exclusion: small study population of 16 patients remained. At baseline: only mild changes of the parenchyma, high rate of lymphadenopathy. Follow up: 55 % of the patients progressed to large duct PSC after a median of 12 years. No correlation of MRI findings with progression to large duct PSC (published: Eur J Radiol. 2020 Aug;129:109101. doi: 10.1016/j.ejrad.2020.109101. Epub 2020 Jun 1. PMID: 32505896)
- MRI features of small duct PSC (Sudhakar Venkatesh)
 - ➔ also here high number of patients excluded after revision, remaining Patients: 39, baseline findings: heterogeneity in the parenchyma, trend of larger ducts, peribiliary T2w hyperintensity, larger spleen size, periportal lymph nodes, distended gall bladder, high rate of cholecystectomy. Follow-up: development of large duct PSC in 33 %, no MR features associated with

progression of small duct PSC to classical PSC (published: Abdom Radiol (NY). 2020 Aug;45(8):2388-2399. doi: 10.1007/s00261-020-02572-w.PMID: 32417935)

- Artificial intelligence to optimize MRI for PSC (Anne Ernst/Christoph Schramm)
 - ➔ Introduction to deep learning, current status: collection of MRCP/MRI images of PSC and non- PSC patients, Aim: design of classification system for PSC/ non PSC, validation of a external cohort, prediction of clinical endpoints, collaborations welcome

C. MRI as a prognostic & predictive biomarker in PSC

- Interrater variability of MRI scores in PSC (Chris Welle)
 - ➔ ANALI scores rated by three radiologists with different experience level, reliability good for non-contrast based score, worse for contrast-based ANALI score
- Interrater variability of MRI scores in PSC (Aristeidis Grigoriadis)
 - ➔ ANALI scores rated by three expert radiologists, similar results to above study, good interrater reliability for non-contrast based score
- MRI Scores for prediction of prognosis in PSC (Nora Cazzagon)
 - ➔ Discussion whether to modify the score according to the above presented results (e.g. inclusion of spleen size), further discussion within the Paris-Padova group how to proceed

3. Election of new MRI working group leadership

- ➔ Annika Bergquist (Stockholm) and Kristina Ringe (Hannover) were suggested as the new leading team of the MRI working group and approved by all participants
- ➔ John Eaton and Christoph Schramm thank all members of this working group for stimulating and enjoyable meetings and all the excellent projects that arose out of this group. A special thanks to our radiologist colleagues for making this a truly interdisciplinary experience!

4. Date for 2021 meeting in Oslo to be discussed in late spring 2021 depending on the course of the pandemic

5. Please update the MRI working group information for your projects on our IPSCSG homepage (www.ipscsg.org), especially for those projects seeking collaboration within the group. If possible, upload your meeting slides. We will place the minutes of the meeting and the list of attendees on the homepage.