were performed. Furthermore, saturation with Bioquin-7-carboxylic acid (Aβ targeting side of Bioquin-HMPAO) was applied for both experimental groups. Nissl staining for animal model of AD was performed. All animal experiments were carried out under the approval of the relevant Institutional Animal Review Committee of Ege University, (Number: 2010-155) İzmir, Turkey.

Results: Higher uptakes on hippocampus were observed at Aβ1-42 injected side in animal model of AD when compared with the control and naïve groups. Saturated studies with Bioquin-7-carboxylic acid compound showed that 99mTc labeled Bioquin-HMPAO compound has specificity on amyloid plaques (Figure 1).

Conclusion: Consequences of the whole experimental studies, it is proposed that the radiolabeled compound (99mTc-Bioquin-HMPAO) might be improved and used as a novel brain amyloid plaque specific agent promising early diagnosis potential of AD.

Keywords: Alzheimer's disease, brain imaging, HMPAO, bioquin, Tc-99m, animal model
Preferred Presentation Type: Poster Presentation

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Monitoring of the Formation and Development Process for Infection and Inflammation Using F-18 FDG, PET/CT

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Abstract

Objective: Many radiopharmaceuticals have been evaluated extensively in both preclinical and clinical studies as potential diagnostic agents to identify the sites of infection. There is a definite role of FDG-PET in diagnosis, extent of assessing the disease, evaluation of treatment response and disease activity in patients with infections and inflammation. The aim of the study, the process of formation and development of infection and inflammation is monitored using (18 F) 2'-deoxy-2-fluoro-D-glucose (F-18 FDG) by Positron Emission Computed Tomography (PET-CT).

Methods: In this study, sterile abscess was induced by using turpentine and infected abscess was induced by using Staphylococcus aureus atcc 25923 strain on rats. In the abscess formation on rats, three grups rats were used as sterile, infected and control grups. There were examined male White Wistar Rats, the clinical healthy animals were 150-220 gr body weight. Bacterial strain and rat model for abscess formation for infected abscess formation on rats (n=7), S. aureus 0.5 ml 107 CFU/ml was inoculated in the right arm of the rats as subcutaneous. For sterile abscess formation on rats (n=7) 0.2-0.4 ml turpentine (sigma-aldrich) was injected into the right arm of the rats as subcutaneous. In control group (n=6), 0.5 ml 0.9% NaCl was injected into the right arm of the rats as subcutaneous. First day imsaging was acquired 24 hours after inoculation of S.aureus and turpentine. 1 mCi 18F-FDG was injected intravenously via the tail vein. Prior to 18F-FDG injection, rats fasted at least 4 hours and well hydrated. Imaging was done using PET-CT (PHILIPS Gemini TF), beginning 1 hour following injection of 18F-FDG IV in the first day and at intervals of 24 hours for five days. First day imaging was performed 1. hour after IV injection of 18F-FDG to obtain optimum imaging time. PET/CT images were visually and semiquantitatively assessed. For semiquantitative analysis of the PET images, a region of interest (ROI) was drawn around the abscess area in the right arm and the noninfected contralateral for control as background.

Results: SUVmaxs were obtained from the images for evaluation glucose meatabolism of infection and inflammation detected by 18F-FDG, PET/CT. A soft tissue infection developed in the right arm site of the rats within 24 hours after bacterial inoculation. Swelling and redness of the abscess area was apparently seen in all rats. Abscess in rats were visualized by 18F-FDG, PET/CT. The higher abscess/ background rate was seen 1. hour than 2. hour after injection 18F-FDG. Imaging time was chosen as 1. hour post injection 18F-FDG for the following days. In the first day of the formation of S.aureus abscess SUVmax was about 3.9±0.9 while SUVmax was 1.5±0.2 in the control site. In sterile abscess, SUVmax of the first day was 2.2±0.8, while the SUVmax was 1.3±0.5 for control site. First day 2. hours following the injection of 18F-FDG SUVmax values were 2.8±0.6 for infected abscess, 1.2±0.09 for infected abscess control site and 1.9±0.9 for sterile abscess, 1.3±0.3 for sterile abscess control site.

Conclusion: Steril and infected abscess differantiation can be evaulated by imaging with 18F-FDG PET. The rate of SUV(max) explores the correlation between sterile abscess and infected abscess. 18F-FDG PET is also useful technique to understand the extent of the infection and inflammation process. In addition 18F- FDG PET imaging method has rapid diagnosis and local availability of equipment and labeled agent.

Key words: F-18 FDG, infection, inflammation
Preferred Presentation Type: Poster Presentation