Wetenschappelijke vergadering van de NVNG: 'IMAGING INFLAMMATION'

De wetenschappelijke najaarsbijeenkomst van de NVNG werd op 13 december 2024 in de Eenhoorn te Amersfoort gehouden met als thema 'Imaging Inflammation'. Na de welkomstwoorden van de voorzitter van de Commissie Wetenschappelijke Ontmoetingen, (CWO) dr. Tineke van de Weijer startte de eerste ochtendsessie 'Components of inflammation' van het door de CWO samengestelde programma onder voorzitterschap van dr. Tineke van de Weijer en dr. Erik Aarntzen met een presentatie van prof. dr. Nick Devoogdt (Vrije Universiteit Brussel) over 'Macrophages in health and disease'. Vervolgens behandelde nucleair geneeskundige dr. Erik Aarntzen (UMCG) het onderwerp 'CVD8 T-cell imaging in immune mediated conditions'. Tenslotte heeft onderzoeker dr. Marieke Stammes van het Biomedical Primate Research Centre (BPRC) 'Imaging infection in non-human primates' gepresenteerd.

Sprekers van eerste ochtendsessie met van links naar rechts Nick Devoogdt, Erik Aarntzen, en Marieke Stammes.

Sprekers van de tweede ochtendsessie met van links naar rechts Asbjorn Scholtens, Dylan Henssen en Pepijn van Horssen

Na de pauze startte de tweede ochtendsessie 'Inflammation in clinical domains (1)' onder voorzitterschap van dr. Hendrikus Boersma en drs. Christel Brouwer met een presentatie van nucleair geneeskundige dr. Asbjorn Scholtens (Meander MC) betreffende 'Inflammation in cardiovascular diseases'. Vervolgens behandelde dr. Dylan Henssen van het UMCG het onderwerp 'Inflammation in the brain'. De sessie werd voorgezet met de presentatie van dr. Erik Aarntzen 'Introduction NVNG Themagroep: Infectie en inflammatie' en vervolgens met 'Update counseling at discharge after RNT' door klinisch fysicus dr. Pepijn van Horssen (Meander MC). De sessie werd afgesloten met de aankondiging van de Woldring Prijs 2024 door de voorzitter van de jury prof. dr. Lioe-Fee de Geus-Oei (LUMC), gevolgd door de prijsuitreiking en een presentatie van de winnaar van de prijs, dr. Emma Coomans (zie aparte kader)

Na de lunchpauze werd in de middag een abstract sessie gehouden onder voorzitterschap van dr. Anke de Vries en dr. Maurits Wondergem met een drietal vrije inzendingen. Onderzoeker Fleur Kleiburg (LUMC) presenteerde

Sprekers van de eerste middagsessie met van links naar rechts Fleur Kleiburg, Sietse van Mossel, Sandra van Berk, Laura Michon en Naila Loudini.

Sprekers van de slotsessie van het symposium met van links naar rechts Ben Zwezerijnen, Ilse Kouijzer en Andor Glaudemans.

'PSMA PET/CT for treatment response evaluation at predefined time points is superior to PSA response for predicting survival in metastatic castration-resistant prostate cancer patients'. Vervolgens presenteerde Sietse van Mossel (LUMC & RadboudUMC) 'Less is more: How Fluorocholine PET/CT can replace multiple preoperative diagnostic procedures for patients suffering from primary hyperparathyroidism', gevolgd door Sandra van den Berk (Meander MC) met het onderwerp 'Quality of life during radionuclide therapy with Lutetium-177 PSMA I&T in patients with metastatic castration resistant prostate cancer in routine clinical care'.
In aansluiting op de abstract sessie werd een New Study sessie gehouden met de presentaties 'iMagIng pulmonaRy Aspergillosis using Gallium-68-dEferoxamine (MIRAGE)' door Laura Michon (Radboud) en 'Scanxiety – Do YOU have it? Improving Patient-Centered Care through the Eyes of the Expert' door Naila Loudini (AmsterdamUMC).

De samenvattingen van deze presentaties zijn te lezen aan het eind van dit verslag.

Na de pauze werd de sessie 'Inflammation in clinical domains (2)' van het najaarssymposium gehouden onder voorzitterschap van dr. Tineke van de Weijer en dr. Erik Aarntzen, met als gastsprekers nucleair geneeskundige drs. Ben Zwezerijnen (Amsterdam UMC) met het onderwerp 'Imaging anti-cancer immune responses', en internist dr. Ilse Kouijzer (RadboudUMC) met de presentatie '[^{18}F]FDG PET/CT in Staphylococcus aureus'. De laatste spreker van de dag was nucleair geneeskundige prof. dr. Andor Glaudemans (UMCG) met 'The holy grail in infection imaging'.

Samenvattingen vrije inzendingen middagprogramma

PSMA PET/CT for treatment response evaluation at predefined time points is superior to PSA response for predicting survival in metastatic castration-resistant prostate cancer patients

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Aim

In metastatic castration-resistant prostate cancer (mCRPC), assessing response to treatment is important for disease management. However, monitoring serum prostate-specific antigen (PSA) levels is not always accurate. This study aimed to assess the efficacy of PSMA PET/CT at specific time points for treatment response evaluation and survival prediction in mCRPC patients, compared to PSA.

Materials and Methods

Sixty mCRPC patients underwent [^{18}F]PSMA-1007 PET/CT at baseline and for treatment response evaluation of either androgen receptor-targeted agents (after three months) or chemotherapy (after completion), and were retrospectively analysed. Visual assessment categorised overall response and response of the worst responding lesion as partial response, stable disease or progressive disease, using the EAU/EANM criteria. Additionally, changes in SUVmax, total tumour volume and total lesion uptake (tumour volume * SUV_{mean}) were calculated. PSA response was defined according to the PCWG3 criteria. Overall survival was defined as time from PSMA PET/CT for treatment response evaluation to death in months. Cox regression analysis identified predictors of overall survival.

Results

PSMA PET/CT and PSA response were discordant in 47% of patients, and PSMA PET/CT response was worse in 89% of these cases. Overall response on PSMA PET/CT independently predicted overall survival (progression versus non-progression: HR=4.05, p<0.001), outperforming PSA response (progression versus non-progression: HR=2.53, p=0.010) and other PSMA PET/CT parameters. Among patients with a PSA decline of >50%, 31% showed progressive disease on PSMA PET/CT, correlating with higher mortality risk (progression versus non-progression: HR=4.38, p=0.008). No flare in PSMA uptake was observed in this cohort.

Conclusion

PSMA PET/CT for assessing treatment response at predefined time points was superior to PSA-based response for predicting overall survival in mCRPC patients treated with androgen receptor-targeted agents and chemotherapy. PSMA PET/CT showed the ability to detect disease progression earlier than PSA levels, which can affect treatment decisions and has the potential to improve patient outcomes. We recommend further research to validate these findings in larger patient cohorts, to extend the number of treatments, and to evaluate cost-effectiveness and impact on patient outcomes.

Less is more: How Fluorocholine PET/CT can replace multiple preoperative diagnostic procedures for patients with primary hyperparathyroidism

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Objective

We conducted a cost-effectiveness analysis in which we compared a preoperative one-stop-shop [^{18}F]Fluorocholine (FCh) PET/CT imaging strategy with current best practice in which FCh PET/CT is only recommended after negative or inconclusive ultrasonography and [^{99m}Tc]Tc-methoxy isobutyl isonitrile (MIBI) SPECT/CT for patients with primary hyperparathyroidism (pHPT) and opting for surgical removal of parathyroid adenoma(s). We investigated whether the FCh PET/CT one-stop-shop strategy performs as well as current best practice but at lower costs.

Methods

We developed a Markov model reflecting patients' hospital journeys after primary referral for biochemically diagnosed hyperparathyroidism

including detriment of persistent pHPT and its hazards such as lifelong dependency on medication. We evaluated both imaging strategies respecting an intraoperative parathyroid hormone (ioPTH) monitored surgical setting as well as a traditional surgical setting without ioPTH monitoring. A cycle length of twelve months and a lifetime horizon were used. We conducted probabilistic analyses simulating 50,000 cohorts to assess joint parameter uncertainty. The incremental net monetary benefit and cost for each quality-adjusted life year were estimated. Furthermore, threshold analyses regarding the tariff of FCh PET/CT and the sensitivity of MIBI SPECT/CT were performed. This study is reported following the Consolidated Health Economic Evaluation Reporting Standards (CHEERS).

Results

The simulated health effects were similar for both imaging strategies. Accordingly, the one-stop-shop imaging strategy did not result in lower patient outcomes. A tariff of €885 for FCh PET/CT (from skull-base to heart-base) was required to be cost saving compared to current best practice.

Discussion

The decision to implement either imaging strategy depends on available local resources as well as meeting patient preferences. The one-stop-shop strategy reduces the number of hospital visits, travel times, waiting times, hospital waste and radiation burden, and enables easy resource capacity allocation. All fundamentally preferable regarding logistics, environmental impact and interference in patients' lives.

Conclusion

One-stop-shop imaging with FCh PET/CT can replace multiple preoperative diagnostic procedures. Daily clinical practice grounds such as available capacity allocation and patient preferences should inform policy-making on whether a hospital should implement the one-stop-shop strategy. This study was recently published in the European Journal of Nuclear Medicine and Molecular Imaging (EJNMMI) with doi: 10.1007/s00259-024-06771-1.

Quality of life during radionuclide therapy with [^{177}Lu]Lu-PSMA I&T in patients with metastatic castration resistant prostate cancer in routine clinical care.

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Aim

[^{177}Lu]Lu-PSMA is used as palliative radionuclide therapy in patients diagnosed with metastatic castration-resistant prostate cancer (mCRPC) that no longer responds to regular treatments with hormone and/or chemotherapy. Meander Medical Centre was the second hospital in the Netherlands that was able to offer this therapy in routine clinical care by using [^{177}Lu]Lu-PSMA I&T. Treatment is given in four to six dosages of 7400 MBq with a six week interval. In this ongoing study, the aim is to evaluate therapeutic efficacy, toxicity and side effects of [^{177}Lu]Lu-PSMA I&T in routine clinical care in mCRPC patients.

Patients and methods

All patients were diagnosed with mCRPC and previously treated with androgen receptor-directed therapy (ARDT) and chemotherapy. Before treatment, patients underwent a [^{68}Ga]Ga-PSMA-11 and [^{18}F]FDG PET/CT scan to determine eligibility for treatment with [^{177}Lu]Lu-PSMA I&T. A follow-up [^{68}Ga]Ga-PSMA-11 scan was performed after every two treatment cycles. [^{177}Lu]Lu-PSMA I&T was prepared at our GMP certified radionuclide laboratory. Patients received questionnaires concerning quality of life (EORTC QLQ-C30 v3.0) and a form to evaluate pain (Visual Analog Scale, VAS), before every treatment and four weeks after their last treatment. PSA, eGFR, questions about pain, quality of life and side effects, were analysed. For haematological toxicity, absolute neutrophil granulocytes, thrombocytes, leukocytes and haemoglobin were analysed.

Results

From November 2021 to April 2024, 200 dosages were administered to 56 patients. To evaluate pain, 37 patients were included and 47 patients to evaluate quality of life. Of the excluded patients, a baseline or follow-up score was missing or baseline pain score was < 2. Average pain score before treatment was 5.3; this decreased to 2.1 after four administrations; a statistically and clinically significant improvement. In 72.3% of the patients (n=34) an improved quality of life was seen. In 14.9% (n=7) the quality of life remained stable.
For 55 patients PSA could be evaluated. 63.6% of the patients (n=35) showed a PSA decrease; in 40% even >50%, which is clinically significant. There was no haematological toxicity and side effects were transient.

Conclusion

These results show that [^{177}Lu]Lu-PSMA I&T is an effective and safe therapy for patients with mCRPC in routine clinical care without relevant haematological toxicity or permanent side effects. Pain is positively influenced and quality of life remains stable or improves. More extensive and updated results will be presented of this ongoing study. ♦