



Diagnostic Value of F18-FDG-PET/CT in CUP Syndrome: a Single-Centre Retrospective Analysis in a Private Practice

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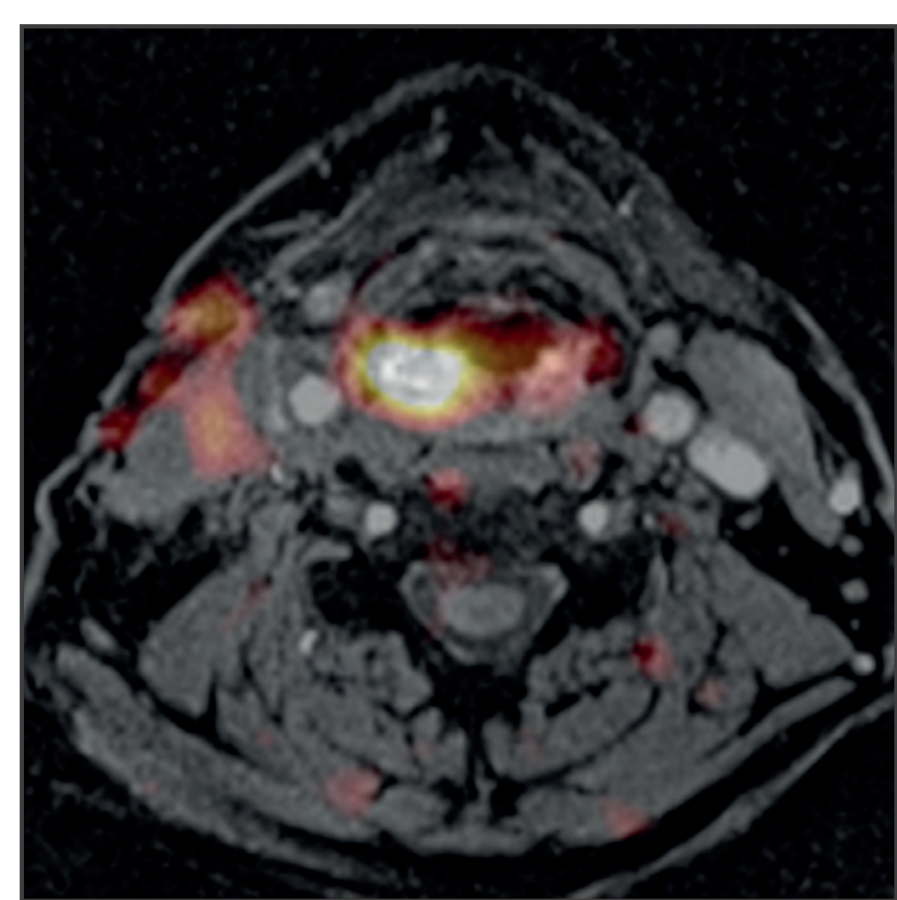
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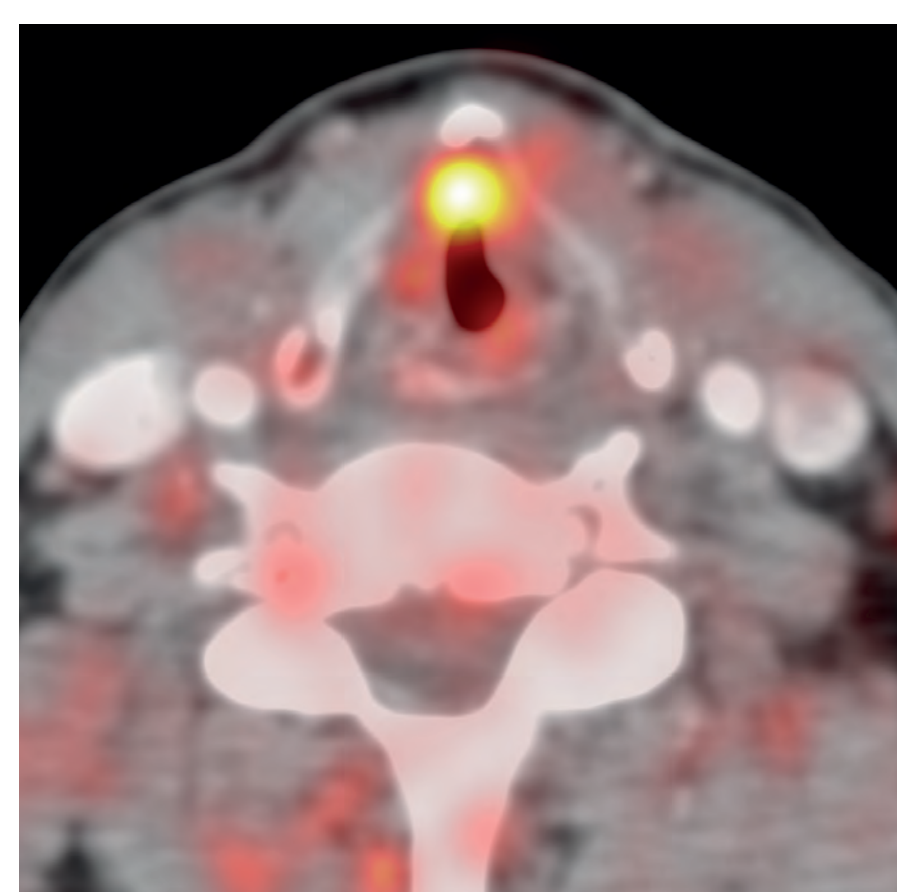
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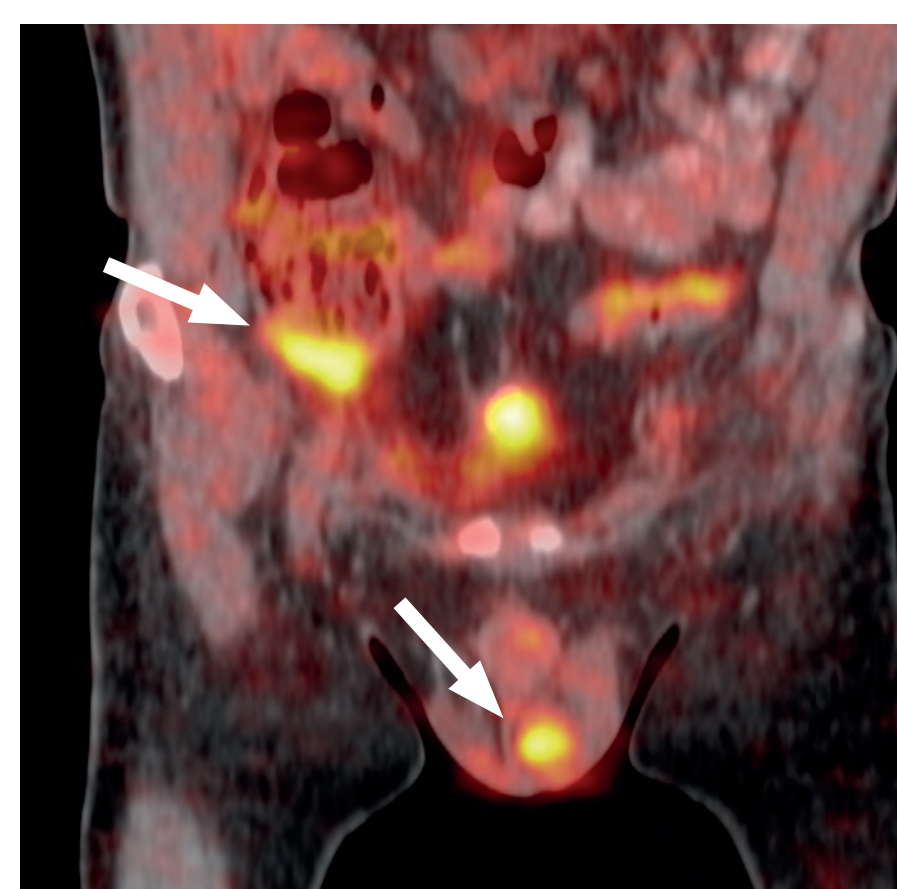
Case 1: 69y f, LN met SqCC, Piriform Sinus carcinoma cT1



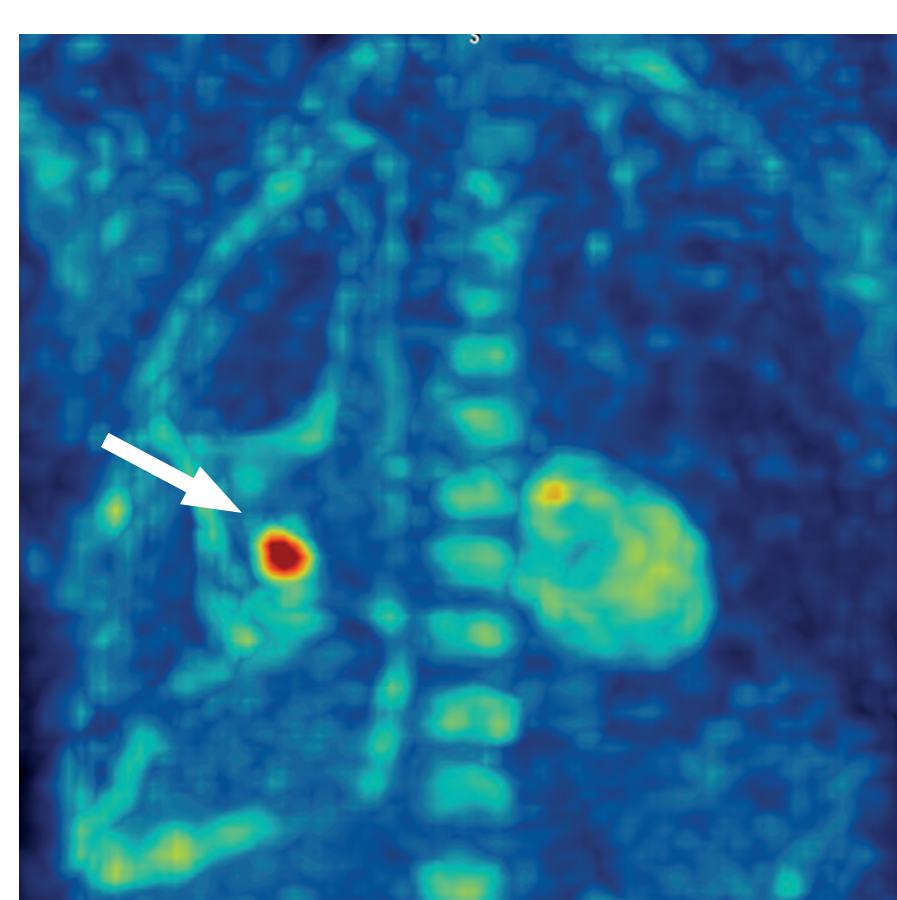
Case 1: 69y f, LN met SqCC, Piriform Sinus carcinoma cT1, FDG-PET/MRI



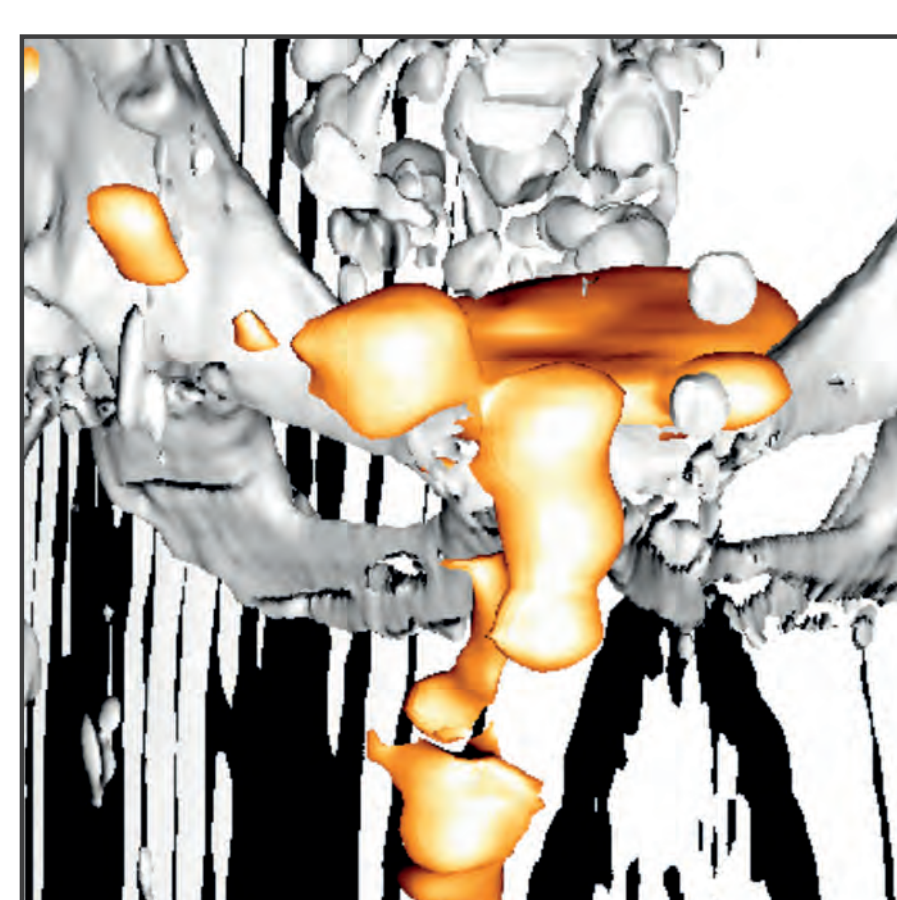
Case 2: 68y m, cervical Ln met SqCC, ant. commissure laryngeal carcinoma



Case 3: 68y m, testicular met, AdenoCa, signet cell, CRC of the Coecum



Case 4: 73y f, pleural carcinosis, AdenoCa, NSCLC, CT occult



Case 5: 77y m, Ln right groin, pleomorphic Carcinoma, Sarcoma of saphenous vein

Aim

Metastatic malignancies without a primary tumour are known as cancer of unknown primary, or CUP syndrome. For this study we distinguish between cervical tumours (mostly squamous) and extracervical tumours (usually adenocarcinomas). The life expectancy of these patients may increase by proper identification of the original tumour and correspondingly adapted therapy. The aim of this analysis is to show the value of F18-FDG-PET/CT in the diagnosis of primary tumours in comparison to conventional diagnostics, based on the database of Praxis im Köln Triangle, Germany.

Methods

Between January 2008 and September 2017, out of a cohort of 4464 cases, we performed 234 F18-FDG PET/CTs for 201 patients (96 male/105 female, age 23-93y.) with CUP syndrome. So far, 94 cases (40%) were tracked (medical letters, histology, therapeutic approach). Conventional diagnostics (CT, MRI, conventional scintigraphy, panendoscopy) were primarily performed on almost all patients.

Results

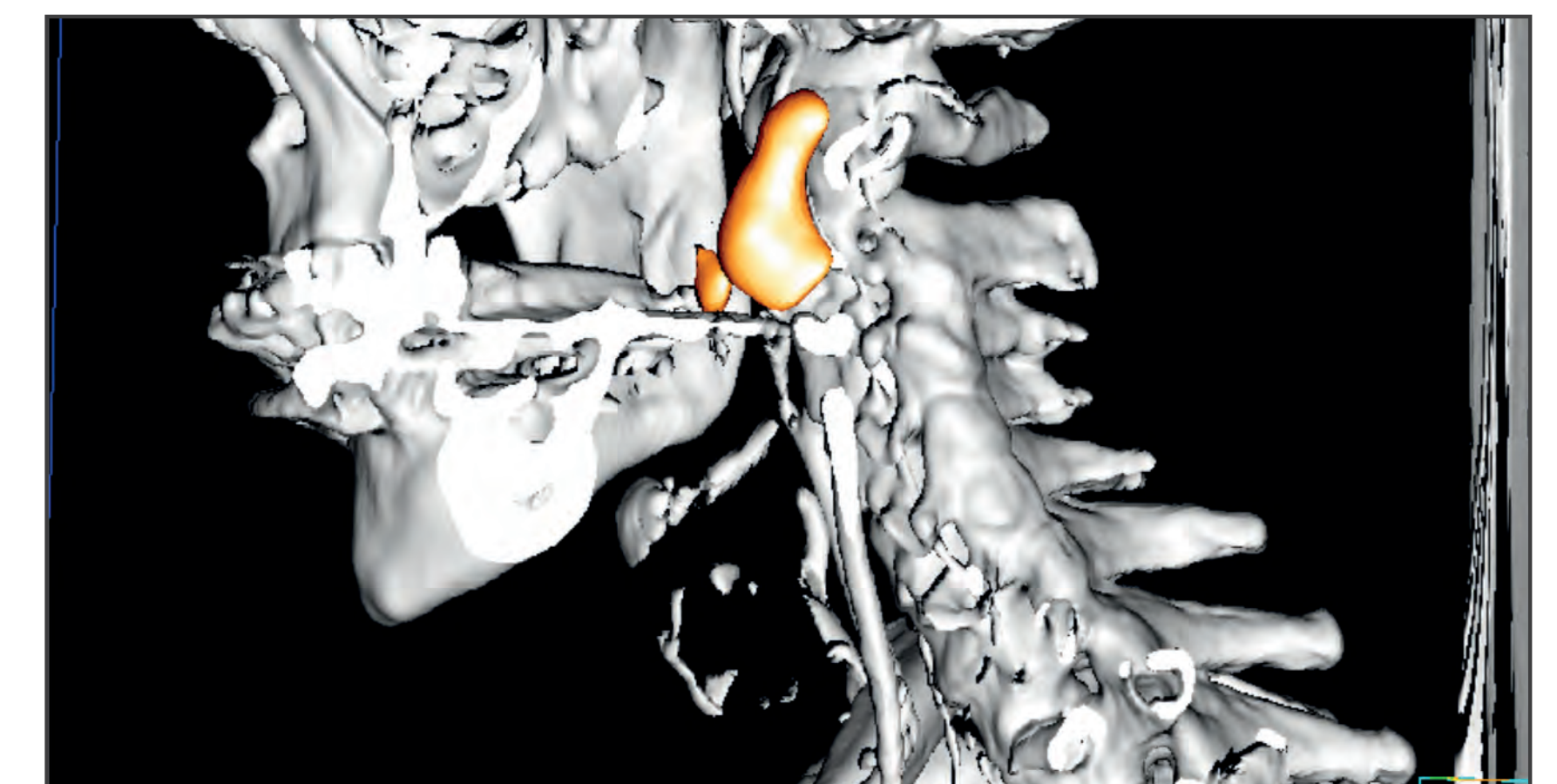
We were able to identify a possible primary in 149 cases (64%) (Figure 1), an additional 104 cases previously not identified in conventional diagnostics. For cervical tumours the primary was most commonly located in the nasopharynx. Adenocarcinomas could be mostly located in lungs and GI tract (Figure 2). Previously unknown tumour metastases (Figure 3) have been identified in 41% of cases. The examination-related sensitivity for the detection of primary tumours was 92% for cervical tumours and the specificity was 87%. For extracervical tumours these values were 93% and 90% respectively (Table 1).

Discussion

The PET/CT guidelines are highly country-dependant. While in some regions PET/CTs are not officially supported as a viable diagnostic procedure, in other regions it has limited indications, e.g. before/after radiation therapy or staging/restaging only of specific tumour types. FDG-PET/CT in head and neck CUP syndromes has recently been added to the short-list of refunds in the German public healthcare system. It is still unclear why studies generally report relatively high numbers of false positive results with a low sensitivity and specificity (Table 2).

Conclusion

The F18-FDG PET/CT can identify additional primary tumours and metastases in 51% of cases when compared to conventional diagnostics. This implies pointing out favourable subsets (limited disease), thus facilitating possible life-prolonging and case-specific therapy.



Case 6: 61y m, pulmonary nodule, SqCC, oropharyngeal Carcinoma

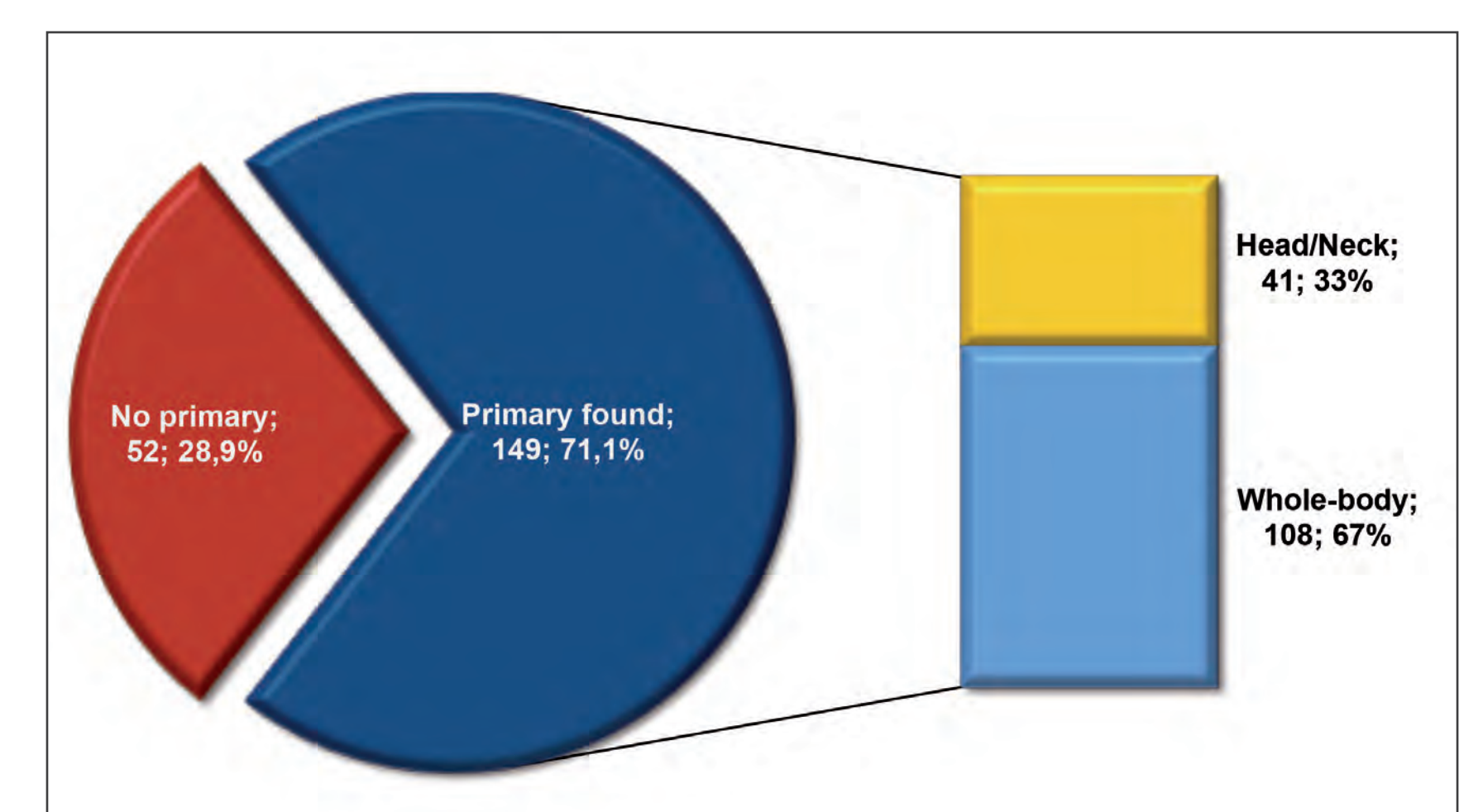


Figure 1: Number of primaries identified

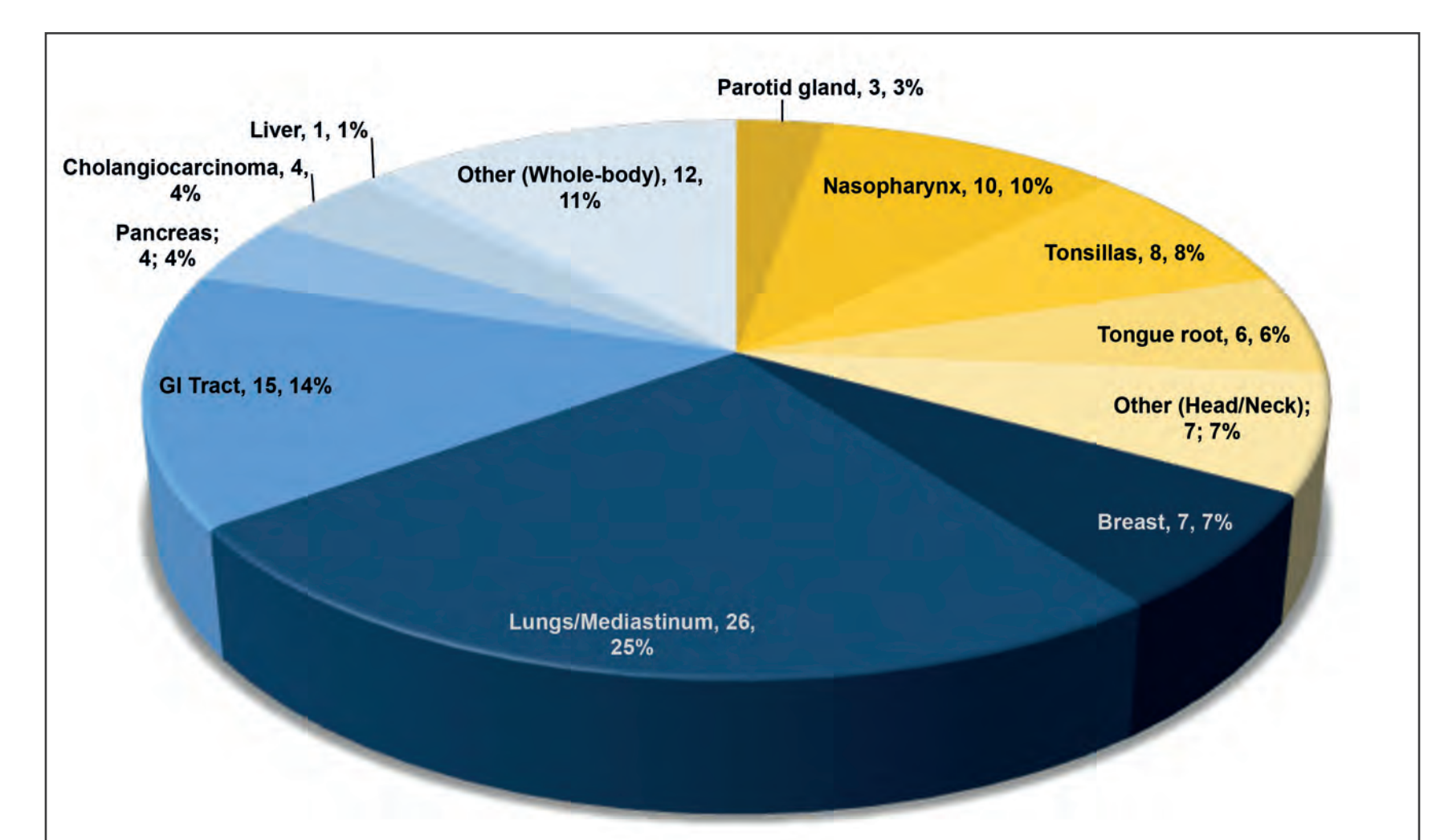


Figure 2: Location of primaries

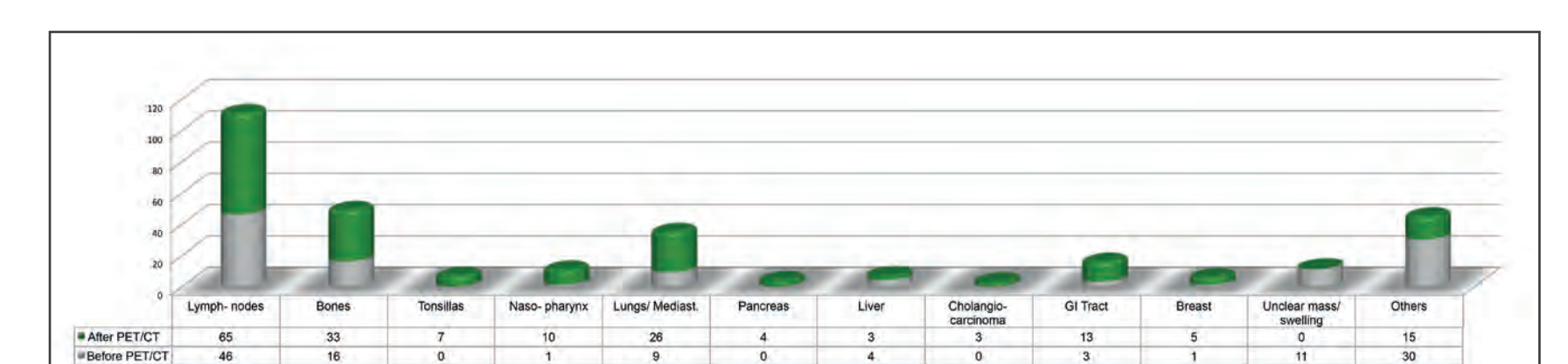


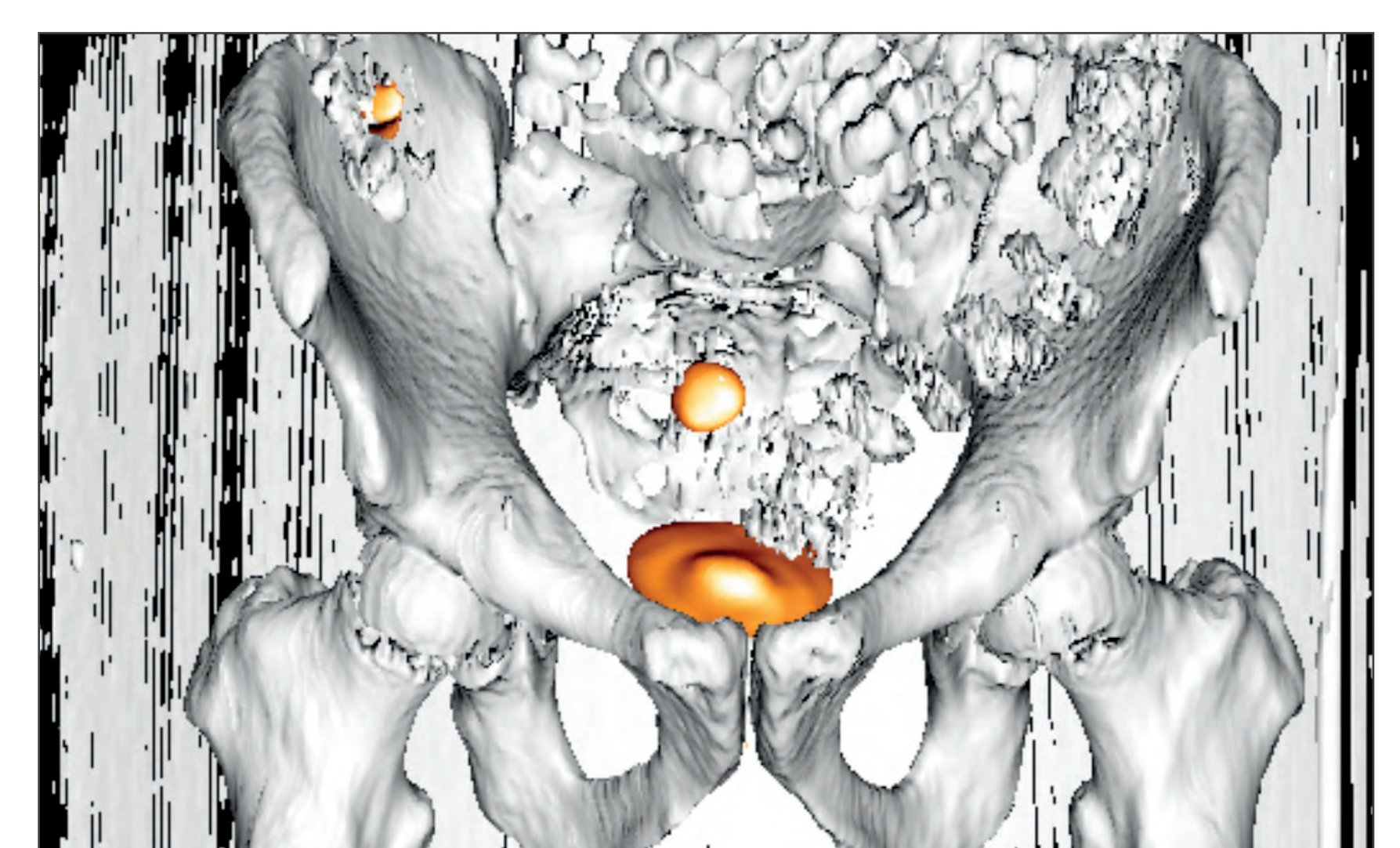
Figure 3: Location of additional metastases

Groups	Sensitivity	Specificity
Head/neck tumours	0,92	0,87
Whole-body tumours	0,93	0,9

Table 1: Sensitivity and specificity

Study and Year	Number of Patients (n)	Detection Rate (%)	Sensitivity (%)	Specificity (%)
Pawaskar et al., 2015	meta-analysis	30 - 37	80 - 85	80 - 85
Lee et al., 2015	56	69	69	88
Winter et al., 2014	meta-analysis	24,5 - 44	> 80	68 - 88
Wang et al., 2013	142	47	96	92
Han et al., 2012	120	42	91	85
Moller et al., 2011	152	39,5	87	88
Pak et al., 2011	51	10	100	80
Kwee et al., 2009	433 (meta-analysis)	37	84	84
Freudenberg et al., 2008	meta-analysis	40	47	80
Pooled estimate		39	82	84
Praxis im Köln Triangle, 2017	201	64	92	89

Table 2: Literature overview



Case 7: 66y m, Pulmonary nodule, AdenoCa, rectal cancer cT1