CT Head Reporting by Radiographers:

Findings of an accredited postgraduate programme

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Introduction

Reporting by radiographers is now widely adopted in England with a current expansion into cross sectional imaging reporting to support service delivery driven by department of health skills mix initiatives[1].

Factors influencing role development in CT head reporting include the national stroke imaging guidelines[2], NICE head injury guidelines[3], and the national radiologist shortage[4]. Supported by Royal College of Radiologist and the Society and College of Radiographers team working guidance[5] and case studies of CT head reporting implementation in NHS trusts[6,7].

Radiographers are now reporting CT head examinations in at least 17 sites in the UK[8] and NHS service improvement guidance suggests this could increase in the future[9].

Aims

To analyse the objective structured examination (OSE) results of the first four cohorts of radiographers (n=23) who successfully completed the postgraduate programme (accredited by the College of Radiographers) in reporting of CT head examinations.

Method

Examinations only included in the OSE where there was agreement between the reports of 3 consultant radiologists.

25 CT head examinations included in OSE – Typical cases are listed below.

Radiographic appearances / pathologies included

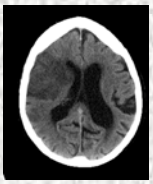
Acute Subdural Hematoma
Acute on Chronic Subdural Hematoma
Chronic Subdural Hematoma
Acute Extradural Hematoma
Subarachnoid Haemorrhage
Acute Intracerebral Hematoma
Acute Intraventricular Haemorrhage
Contusion
Mass (solitary, multiple, cavitating and/or eroding – various sites)
Glioma
Meningioma
Metastasis
Aneurysm
Acute Infarction
Chronic Infarction

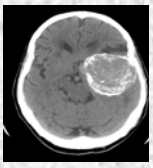
Associated Findings including:

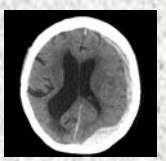
Mass effect, midline shift, herniation, fracture, sulci effacement

Normal Variants /incidental findings including:

Ischaemic vessel disease, benign calcification, cyst, craniotomy







Inclusion / Marking criteria for OSE

Prevalence of abnormal cases = 50%;
Images included of patients referred from A/E, OP, IP and GP sources;
Wide range of clinical indications included;
Expected answers agreed with External Examiner (Consultant Radiologist);
Candidates indicated if appearances were NORMAL or ABNORMAL and;
provided key details of abnormal appearances and pathology demonstrated;
Sensitivity and specificity calculated using NORMAL / ABNORMAL decision;
Maximum of 5 marks (fractionated) allocated per abnormal case;
Agreement percentage calculated using expected agreed answer.

Results

Individual Cohorts

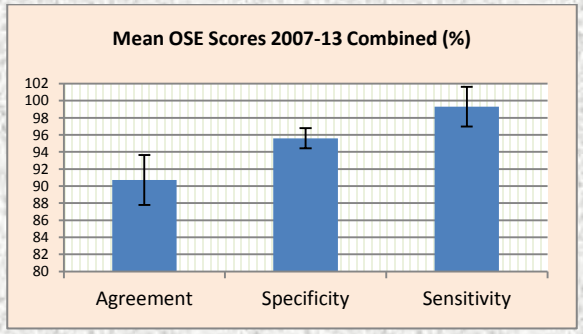
%	2007-08	2008-09	2011-12	2012-13
Sensitivity	100	97.7	100	100
Specificity	96.6	93.7	100	92.2
Agreement	87.5	90.1	91.7	93.3

Most frequent interpretative errors (In descending order)

Perifocal Oedema when normal for age
Raised Intracranial Pressure when normal for age
Lacunar Infarction when normal for age
Periventricular Small Vessel Disease when normal for age
Traumatic Hematoma as Haemorrhagic extension
Subcortical Ischemia when normal for age
Ventriculomegaly for volume effect
Subdural Hygroma as a Subdural Hematoma
Basal Ganglia Ischemia for Perivascular Space
Cerebral Stroke as Cerebral Tumour

Mean OSE Scores 2007-13 Combined

Students n = 23 Reports n = 575	Mean (%)	95% CI	SD
Sensitivity	99.3	97.4-99.8	5.65
Specificity	95.6	93.1-97.7	2.89
Agreement	90.7	88.1-90.8	7.14



Discussion

At the end of this accredited postgraduate programme of study, the radiographers have demonstrated high levels of sensitivity, specificity and agreement over 90% on all measures.

Previous studies[10,11], investigating variation between experienced radiologists in the interpretation of CT head examinations, demonstrated agreement rates of 86.6% (13.4 - 20.2% disagreement for major significant abnormalities).

Further work is also needed to confirm the clinical application of these initial encouraging findings, which suggest that more radiographers may be able to contribute to this aspect of the reporting service.

References

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