Predictive values, sensitivities, and specificities for peripheral lymphadenopathy as marker of HIV infection by site and size of lymph nodes

Site (size (cm)) of lymph node	Positive predictive value (Rate (%))	Negative predictive value (Rate (%))	Sensitivity Rate (%))	Specificity (Rate (%))	Odds ratio (95% confidence interval)
Axillary (≥1)	63/69 (91)	107/190 (56)	63/146 (43)	107/113 (95)	13·5 (5·3 to 36·6)
Axillary (≥0·5)	110/145 (76)	78/114 (68)	110/146 (75)	78/113 (69)	6·8 (3·8 to 12·3)
Submandibular (≥1)	31/35 (89)	109/224 (49)	31/146 (21)	109/113 (96)	7·4 (2·4 to 25·4)
Submandibular (≥0·5)	110/139 (79)	84/120 (70)	110/146 (75)	84/113 (74)	8·9 (4·9 to 16·3)
Epitrochlear (≥1)	53/64 (83)	102/195 (52)	53/146 (36)	102/113 (90)	5·3 (2·5 to 11·5)
Epitrochlear (≥0·5)	123/144 (85)	92/115 (80)	123/146 (84)	92/113 (81)	23·4 (11·7 to 47·6)
Epitrochlear (≥0·5)+axillary (≥1)	63/68 (93)	108/191 (57)	63/146 (43)	108/113 (96)	16·4 (6·0 to 48·6)
Epitrochlear (≥0·5)+submandibular (≥1)	31/33 (94)	111/226 (49)	31/146 (21)	111/113 (98)	15·2 (6·1 to 42·0)
Axillary (≥1)+submandibular (≥1)	34/36 (94)	111/223 (50)	34/146 (23)	111/113 (98)	16·9 (3·8 to 104·0)
Epitrochlear (≥0·5)+axillary (≥1)+ submandibular (≥1)	26/27 (96)	112/242 (46)	26/146 (18)	112/113 (99)	24·3 (3·4 to 488·5)

(96%) nodes, but small epitrochlear nodes occurred twice as commonly as small axillary nodes and four times as commonly as small submandibular nodes. Larger epitrochler nodes (≥1 cm) improved specificity to 90%, but positive prediction and sensitivity fell dramatically. Thus, unlike for axillary and submandibular nodes, enlargement by ≥0·5 cm was a much better predictor than enlargement by ≥1 cm (odds ratio 23·4 *v* 5·3). A combination of two different regions improved the positive predictive value to >90% but with a noticeable fall in sensitivity.

A small enlargement of epitrochlear nodes was a common and useful marker for HIV disease in an acute general medical ward in sub-Saharan Africa where the prevalence of HIV infection was 56%. Extreme caution must be taken not to extrapolate these predictive values beyond the setting in which they were derived, particularly where prevalences are lower. It remains to be seen whether enlarged epitrochlear nodes predict early HIV disease in other clinical settings. However, the clinical importance of epitrochlear nodes has clearly been forgotten and deserves more attention.

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Interpretation of electrocardiograms by doctors

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After marking examination papers of medical students, one of us (HM) found that only one in 50 students correctly identified the PR and QT intervals of the electrocardiogram. As a cardiothoracic surgeon was also unable correctly to identify these intervals we investigated whether such knowledge was lacking in doctors in general.

Subjects, methods, and results

An illustration of a standard electrocardiogram (8 cm×3 cm) was presented on a single sheet of A4 paper. One hundred and fifty eight doctors of diverse specialty and seniority (table) were asked to mark the PR and QT intervals with arrows. These intervals are defined in a standard way internationally and are discussed in various text books.[1-5] If a candidate was able successfully to mark the PR interval and to state what time interval the smallest square on an electrocardiogram represents when recording at standard speed (25 mm/s), he or she was deemed capable of defining PR duration. The answers were unprompted and anonymous; respondents were supervised to ensure neither consultation with colleagues nor reference to written texts. They were asked not to mention the existence of the survey to colleagues. All answers were collected in a single morning.

Specialty and grade of the 158 doctors completing questionnaire on PR and QT interval of electrocardiogram

Grade	Medicine*	Cardiology	Surgery†	Cardiothoracic surgery	Anaesthetics	Accident and emergency medicine	Total
House officer							20
Senior house officer	23	3	5		3	5	39
Registrar	15	13	3	4	12	2	49
Senior registrar	10	2	2		6	1	21
Consultant	12	5		3	7	2	29
Total	60	23	10	7	28	10	158

*Any medical specialty other than cardiology.
†Any surgical specialty other than cardiothoracic surgery.

Overall, 117 of the 158 doctors completing the questionnaire (74%) did not have sufficient knowledge to measure a PR interval, with 107 (68%) unable to define the PR interval and 65 (41%) unaware of the time interval represented by a small square on an electrocardiogram at standard recording speed. The ability to measure PR interval was poorest among house officers (19 out of 20 failed) and best among consultants (although 17 out of 29 (59%) still failed). Seniority did not, however, consistently correlate with a correct response. Thus 18 (78%) medical senior house officers, six (50%) medical consultants, 12 (80%) medical registrars, and all 10 medical senior registrars could not assess a PR interval. Furthermore, this lack of knowledge was not confined to any one specialty: five out of 23 cardiologists (22%), 21 out of 28 anaesthetists (75%), eight out of 10 doctors in accident and emergency medicine (80%), and all 10 general surgeons failed correctly to identify the PR interval. Worryingly, this lack of knowledge applied to all of the cardiothoracic surgeons, to doctors practising in accident and emergency medicine (eight of the 10, including both consultants), to practising physicians (as above), and even to cardiology registrars (four out of 13 (31%)). One of the five consultant cardiologists defined the PR interval incorrectly.

The duration of the QT interval is also an important basic measure, particularly in assessing patients with a predisposition to arrhythmia, including those who have taken overdoses of drugs such as tricyclic antidepressants. It was thus alarming to find that 120 (76%) of those questioned defined the QT interval incorrectly, including all 10 doctors in accident and emergency posts. Also faring badly were cardiologists

(one of the three senior house officers, 10 of the 13 registrars, one of the two senior registrars, and one of the five consultants were incorrect), cardiothoracic surgeons (three of the four registrars and all three consultants were wrong), and physicians (15 of the 23 senior house officers (65%), 10 of the 13 registrars (77%), seven of the 10 senior registrars (70%), and 10 of the 12 consultants (83%) were wrong.

Overall, if defining the PR and QT intervals and the duration of one small square on the electrocardiogram were together needed to pass an examination 90% (142/158) of those questioned would have failed.

Comment

Elementary knowledge of the electrocardiogram was badly lacking in this study. Indeed, two of the 10 medical senior registrars and a consultant cardiothoracic surgeon labelled the S wave a Q wave, and 17% of our sample measured the PR interval from the middle of the P wave and 11% from its end. Bundle branch block must also confuse the 47% who measured the PR interval to the peak of the R wave.

Being able to define a PR interval correctly may make little difference to medical practice, but a lengthening PR interval may herald serious disease. How can recorded interpretations of electrocardiograms be compared if individual doctors use their own criteria to define its basic features?

Questionnaires were not necessarily completed by staff at the hospitals where we work.

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Provision of services for cleft lip and palate in England and Wales

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In 1991, 773 liveborn infants were reported to have a congenital cleft of the lip or palate.[1] Although the incidence of clefts is relatively low, affected children require multidisciplinary surgical and non-surgical care from birth until adulthood. The results attained are now considered to be falling below those achieved in centres overseas, particularly in northern Europe.[2]

Methods and results

Concern about the provision of services for children born with cleft lip and palate led to a survey of current surgical activity in England and Wales by the Royal College of Surgeons of England. A questionnaire was sent to all consultant orthodontists in England and Wales. From the results of this questionnaire and discussions with the relevant surgical associations, all surgeons currently or recently undertaking primary cleft repairs were identified. Each of the identified surgeons was sent a questionnaire asking about treatment of cleft lip and palate in their units; 89 surgeons responded (93%).

Seventy six surgeons based at 45 centres stated that they had undertaken primary lip or palate repairs within the previous two years. Most of them were plastic surgeons (64) but eight were oral and maxillofacial surgeons, three were paediatric surgeons, and one was an ear, nose, and throat surgeon. The mean number of repairs of cleft palate and lip undertaken by each surgeon was 20·56 and 15·85 respectively in the two years. There was a wide range in the number of repairs undertaken by individual surgeons (table). Thus one third of surgeons performed fewer than five primary cleft repairs a year.

Most surgeons who repaired cleft palates and lips attended joint consultant cleft clinics, and most clinics had speech therapists and orthodontists in attendance. However, only 16 clinics (35%) could call on the advice of an ear, nose, and throat surgeon. Four fifths of clinics (36) had no standardised system of keeping records.

Numbers of repairs of cleft lip and palate undertaken by surgeons in England and Wales, 1992-3 inclusive

	No of surgeons*
Cleft lip	
No of repairs	
0-10	37
11-20	17
21-30	10
31-40	6
41-50	1
>50	4
Cleft palate	
No of repairs:	
0-10	30
11-20	19
21-30	7
31-40	8
41-50	6
>50	5

*One surgeon treated clefts but did not say how many.

Comment

When the treatment of clefts is inexpert and uncoordinated, outcomes may be seriously substandard. Poor services are also more costly because surgical procedures have to be repeated and ancillary care such as speech therapy and orthodontics are protracted. The report of an expert working group on orthodontics in the NHS stated that good care of patients with a cleft lip or palate in the first 10 years of life was especially important and that there was considerable evidence that initial care had a profound influence on the complexity and duration of later treatment.[3] Elsewhere in surgery, deficiencies in outcome have consistently been ascribed to surgeons who perform only a few operations each year. The minimum number of primary cleft repairs that a surgeon should undertake each year to maintain clinical skills is not known, but an expert working group recommended that a caseload of 40-50 cleft repairs each year would be desirable.[3]

Purchasing arrangements must be devised to permit centralisation on regional multidisciplinary teams, but the key to rationalisation of cleft teams lies principally with the professionals concerned. Regrettably, experience suggests that despite unfavourable regional audits, professionals are unwilling to relinquish an interest in treating clefts, even when this is limited to a handful of cases a year.[4] More specific audits of the caseload of individual surgeons who perform few operations a year is especially difficult, however, since there are limitations of statistical power with small samples and inadequate record keeping.[5] As yet clear leadership from the specialty groups concerned has not been forthcoming.

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