Attitudes towards retinoscopy and the relative accuracy of different kinds of retinoscope

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Introduction

• History of retinoscopy
• Hypotheses
• Previous work
  - Ret “always” on pre-school children 92% (CPS 2008)
  - Ret inaccuracy: spot +0.75, streak +0.45 (Guillon 1986)
  - Auto not as accurate as ret (Jorge 2005)
  - Ret & Subj compare favorably (Grosvenor et al 1985)
• Research conducted: UK & International survey, Clinical trial
Methods - UK survey

- 1000 College members March 2010
- 23-item electronic survey
- tick-box multiple choice
- option to make comments
- Prize draw incentive
- Analysed using Chi-squared Automatic Interaction Detection (CHAID)
UK survey results

- 298 replies (30%)
- Ret considered important (94%)
- Keeler popular; 79%
- spot 20% vs streak 79%
- Combi: young 51%, old 18% (19% unsure)
- 82% no opinion whether combi accurate
- Useful for cataract (88%) & keratoconus (94%)
UK survey results

Chi = 62.25, df = 6, P < 0.001

Also, City & Aston spot use:
young 25%, old 51%
Chi = 9.41, df = 1, P < 0.01
UK survey results

Spec Rx using objective data only

Ind: 93% ret only, 2% ret & auto
Multiple: 72% ret only, 24% ret & auto

Chi=31.38, df=3, P<0.001
UK survey results

Retinoscopy as primary method of objective refraction

Chi = 63.8, df = 6, P < 0.001
UK survey results

- 30% of eye examinations involved retinoscopy (n=90)
- 15% of eye examinations involved retinoscopy (n=46)
- 14% of eye examinations involved retinoscopy (n=41)
- 39% of eye examinations involved retinoscopy (n=116)

The chart represents the frequency of retinoscopy use in eye examinations, with the percentage of eye examinations in which retinoscopy is performed ranging from 0 to 100%.
Dynamic retinoscopy use

[Bar graph showing the percentage of doctors who use dynamic retinoscopy never, occasionally, or frequently.]

- 51 (n=152) never
- 45 (n=133) occasionally
- 4 (n=11) frequently
UK Survey Conclusions

• retinoscopy considered useful by majority
• 92% satisfied; multiple/HES 14% dissatisfied, ind/locum/education 2% dissatisfied
• Auto use varies with practice type
• 31% of optoms use ret in < 25% of exams
• ‘Age’ not influential.....apart from younger use
  > combi and streak
• Dynamic techniques used by half (48%)
Methods - International survey

- J & J attendees in UK, Prague and Dubai
- Delegates with an interest in contact lenses
- 5-item paper survey
- tick-box multiple choice
- CHAID analysis
International survey results

• 583 responses (334 optoms)
• date of qualification and profession not influential
• Infrequent use of static retinoscopy – apart from UK
• Low use of dynamic technique
International survey results

retinoscopy as main method of objective refraction

- Germany/SE Europe: 2%
- CS/Russia: 3%
- Nordic/Benelux/KSA: 8%
- UAE: 18%
- UK: 84%

country or region
International survey results

International dynamic retinoscopy use

Countries or regions:
- ChechSlovak
- Germany/UK/SE Europe
- Nordic/Benelux/KSA/Russia
- UAE

Percentage:
- ChechSlovak: 12%
- Germany/UK/SE Europe: 28%
- Nordic/Benelux/KSA/Russia: 42%
- UAE: 68%
Clinical trial methods

• 4 optoms (2 streak, 2 spot)
• 6 subjects
• Each optom used 3 rets on every patient (RE)
• Accuracy compared with subjective result
• Analysed using 2-factor factorial ANOVA
Clinical trial results

retinoscopy inaccuracy from scalar vector U values

Scalar vector (U) in Dioptres

Inexperienced Spot user 1
Experienced spot user 2
Inexperienced streak user 3
Experienced streak user 4
Retinoscopy Techniques

Techniques
- Static
- Binocular Method of Barratt
- Mohindra
- Dynamic
- Estimation of Rx without using lenses
- Modified monoc indirect ophthalmoscopy!
- Carter method
- Incident neutral
- Cycloplegic
Dynamic retinoscopy

• Monocular Estimation Method (MEM) (del Pilar Cacho 1999)
• Modified Nott (Woodhouse 2012)
• > reproducibility compared with subj for AA (Leon et al 2012)
• Low and High Neutrals – variation! (Whitefoot & Charman 1992)
• Computer retinoscopy (Nielson 2002)
• Insufficiency = amp >1.50DS lower than expected for age or lag >+1.00D (Eperjesi, Bartlett & Dunne 2007)
• Investigate if >0.50D asymmetry (Allen, Fletcher & Still 1991)
• Hoffstetters formula (Borish 1975)
Indications for retinoscopy

- Quick objective data
- Qualitative assessment of medii, incl CL checks
- Objective assessment of accommodation, especially:
  - Down’s (Woodhouse 1993) & Cerebral Palsy (Leat 1996)
  - reading difficulties (Evans 2009)
  - dyslexia (Evans 2003)
  - GH/drugs
- Consider B/F for DS (Nandakumar & Leat 2010)
UK Survey Comments

• “I wouldn't be without my ret”
• “Retinoscopy is underused by practitioners that use auto refractors”
• “Colleagues who use autorefractor and don't retinoscopy regularly have struggled if autorefractor not working. Useful skill to have even though I think autorefractors are going to become the norm”
• “I am not quite sure as to what the point of this survey is”
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