This case suggests that IOL tilt is a potential problem when implanting SFIOLs in patients with classic aniridia. We propose provision of additional support in such cases.

Acknowledgements

We thank Chris Willcock for research assistance. We acknowledge the support from the Ophthalmic Research Institute of Australia.

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doi: 10.1136/bjo.2006.110817

Accepted 14 November 2006

Competing interests: None declared.

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Skills acquired during training: a cause for concern?

Ophthalmology is a popular and competitive speciality, and there has been increasing concern regarding the balance of specialists completing training and the number of vacancies for their employment.¹ The Royal Colleges have suggested trainees develop their skills during training to improve employment in the evolving NHS. This is the first study to evaluate the popularity and competitiveness of ophthalmology subspecialties, and identified an imbalance between the skills acquired during specialist registrar training and those in demand in the workforce. Trainees are able to identify their preferred subspecialty interest at an early stage; this information may be used by both trainees and trainers to develop a coherent strategy for workforce planning in both the NHS and academia.

We evaluated skills acquired in training by surveying the career intentions and subspecialty interests of current ophthalmology specialist registrars (SpRs) in North Thames (London Deanery). An electronic questionnaire was emailed to all 60 ophthalmology SpRs in the North Thames Region during 2005, via the Royal College of Ophthalmologists' Ophthalmic Trainees Group. The demand of skills in the workforce was evaluated by assessing the advertised posts for consultant ophthalmologists in the UK in 2005.

Thirty four questionnaires were returned, representing 56.7% of SpRs in the North Thames Region. Twenty three (68%) were male and 11 (32%) were female, with a mean age of

35 (range 30–47) and stage year 3 of SpR training. Preferred subspecialty interests stated by respondents and subspecialty requirements of advertised consultant ophthalmologist posts for 2005 are shown in table 1 and figure 1.

Comments

The most popular subspecialty interests among SpRs were Vitreoretinal surgery (23.2%), Oculoplastics (22.0%) and Anterior Segment (15.9%). The least popular common subspecialty was Paediatrics and Strabismus (9.8%). Of the 62 consultant posts advertised in 2005, the subspecialist interests specified were:

Glaucoma (21.0%), Medical Retina (21.0%), Paediatrics and Strabismus (19.4%), Adnexal (16.1%), Anterior Segment (6.5%) and Vitreoretinal (6.5%). This information shows a mismatch between the subspecialty interests, especially for Vitreoretinal surgery and Anterior Segment. Our findings suggest that a majority of trainees surveyed still intend to pursue these careers despite the uncertainty of securing a consultant post. Conversely, Paediatrics and Strabismus was third most common consultant post advertised (19.4%), but less popular among trainees, with only 9.8% stating an interest in this subspecialty.

Figure 1 A chart showing the mismatch between subspecialist interests of trainees and consultant posts advertised in 2005.

Table 1 Subspecialty interests of UK ophthalmology SpRs (2005)

Subspecialty	Primary subspecialty interest		Consultant ophthalmologist posts advertised	
	Trainees (n)	Trainees (%)	Posts (n)	Posts (%)
Vitreoretinal	19	23.2	4	6.5
Oculoplastics	18	22.0	10	16.1
Anterior Segment	13	15.9	4	6.5
Medical Retina	11	13.4	13	21.0
Glaucoma	10	12.2	13	21.0
Paediatrics & Strabismus	8	9.8	12	19.4
Oncology	1	1.2	0	0
Neuro-ophthalmology	2	2.4	2	3.2
Medical Ophthalmology	0	0	1	1.6
Other*	2	—	3	4.8

*Accident & Emergency, academic posts.

A large proportion of SpRs had completed (25%) or were currently undertaking a higher degree (23%). This may reflect the high level of competition for ophthalmology training positions,² however there was a substantial interest in academic ophthalmology among those surveyed, with 26% stating an intention to pursue a career in academia.³ The impact of shrinking education budgets is likely to impact the availability of such posts, however the introduction of defined training programmes in academic medicine^{4,5} may enable this potential to be tapped.

This is the first study to evaluate the popularity and competitiveness of ophthalmology subspecialties, and has identified an imbalance between the skills acquired during training and those in demand. This study indicates that SpRs are able to state their preferred subspecialty interest at an early stage; this information may be used by both trainees and trainers to develop a coherent strategy for workforce planning in both the NHS and academia.

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This paper was presented at the Oxford Congress, UK, July 2006

doi: 10.1136/bjo.2006.110577

Accepted 15 November 2006

Competing interests: None.

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A case of bilateral endophthalmitis and carriage of β -defensin 1 –44CC genotype

β -defensins are innate antimicrobial peptides found in a variety of ocular tissues and are critical to the immune response.^{1–3} We present a case of bilateral endophthalmitis and show the carriage of the –44CC genotype in β -defensin 1. The polymorphism has previously been linked to increased susceptibility to infection.^{4–7}

Case report

An 80-year-old man underwent cataract surgery in the right eye complicated by a capsular tear. Within 4 days he returned with a hypopyon, painful loss of vision and reddening of the right eye. Endophthalmitis was diagnosed, an urgent vitreous tap was performed and intravitreal cetazidime and vancomycin were started. Microscopical examination revealed Gram-positive cocci, but no final growth of organisms. The right eye responded to treatment, but 1 month later a retinal detachment was diagnosed in the same eye. This was surgically repaired without complications. A year later, after an uncomplicated left cataract surgery in another hospital, the patient presented again with endophthalmitis symptoms, including hypopyon, rapid visual loss (hand movements), pain and reddening of the eye. He responded well to intravitreal amikacin and vancomycin treatment. Microscopy was positive for leucocytes but no organisms were seen. Final visual acuities were 6/9 (right) and 6/6 (left).

This gentleman could have had an underlying genetic predisposition to endophthalmitis, given that he had had the same rare complication after ocular surgery on two separate occasions. DNA sequence variants, or polymorphisms, in the β -defensin gene family may reduce efficacy of defensin activity or production, and predispose an individual to infection. We, therefore, decided to screen two genes of this gene family for polymorphisms.

Methods

We examined the promoter, 5' and 3' untranslated regions (UTRs) and the coding regions of β -defensin 1 and 2 (BD1 and BD2), using PCR primers designed to incorporate all previously reported single-nucleotide polymorphisms (SNPs) in BD2 and 39% of the reported SNPs in BD1. Seven amplicons were produced, sequenced and analysed for new and previously reported sequence variants.

Results

We observed a total of 14 sequence variations: six new and eight previously reported. All new variants were seen in BD2. Seven of the previously reported polymorphisms were in BD1 and one was in BD2 (table 1).

BD1 has been studied extensively and we did not identify any new sequence variants. It is

thought to be constitutively expressed in the vitreous, and one of the SNPs we identified, –44G→C, has been previously linked with a predisposition to infection. Two independent studies have shown an association between –44C allele and HIV infection.^{5,7} Furthermore, Hu *et al*⁶ observed an increase in the –44C allele associated with patients having chronic obstructive pulmonary disease when compared with healthy smokers. Jurevic *et al*⁴ showed that the –44G allele was protective against high Candida carriage in patients with diabetes and healthy controls. All these studies suggest that carriage of the –44C allele is associated with increased predisposition to disease. Although the function of this particular polymorphism is unknown, its position in the 5' UTR suggests that it could influence BD1 expression. Possession of either the G or C allele may lead to a variation in defensin levels among individuals. This poses an interesting question as to whether genotyping this locus can predict those at a greater risk of endophthalmitis. A larger study is now underway to determine whether there is a true association between endophthalmitis and carriage of the –44C allele.

BD2 has been less well studied, but is thought to be upregulated in the eye in response to infection/inflammation.^{3,9} We found six new sequence variants and one previously reported SNP (+319ins9) in BD2. Five of our new sequence changes are in the BD2 promoter region. This region is rich in transcription factor (TF)-binding sites that are known to play a key role in upregulation of BD2.⁹ Polymorphisms in this region could render it unresponsive to TF stimuli thereby inhibiting the production of BD2 peptide. Functional work will be necessary to deal with this in more detail.

One has to be very cautious when interpreting and extrapolating findings from a single individual. However, bilateral endophthalmitis is extremely rare and would be more likely to occur in genetically susceptible individuals. Defensins are natural antimicrobial peptides and it is easy to see how a reduction in their production or function could predispose to endophthalmitis. Given the rarity of the condition, large studies on endophthalmitis are difficult, but we hope that by conducting this screening on more individuals we shall determine the role of defensins in susceptibility to

Table 1 Sequence variations seen in β -defensin 1 and β -defensin 2 genes in a patient with bilateral endophthalmitis

Gene	Sequence change	Region	SNP identifier
BD1	–694 A→G	Promoter	Rs2977829
BD1	–688 C→G	Promoter	Rs2702877
BD1	–44 G→C	5'-UTR	Rs1800972
BD1	–20 G→A	5'-UTR	Rs11362
BD1	+6805 C→T	Intron 1	Rs2741124
BD1	+7181 G→A	3'-UTR	Rs1047031
BD1	+7391 T→C	Beyond 3'-UTR	Rs9314616
BD2	–1257 T→G	Promoter	New
BD2	–823delC	Promoter	New
BD2	–475 A→C	Promoter	New
BD2	–434 A→G	Promoter	New
BD2	–269 C→G	Promoter	New
BD2	+238delT	Intron 1	New
BD2	+319ins9	Intron 1	Vankeerberghen <i>et al</i> ⁹

BD1, β -defensin 1; BD2, β -defensin 2; SNP, single-nucleotide polymorphism; UTR, untranslated region. Changes are numbered from translation start site.