lenses, seem to be particularly ineffective against *Acanthamoeba*. Although contact lens disinfection systems in Britain have to comply with stringent tests of efficacy against a panel of microbes, these are directed against planktonic organisms in vitro, rather than the more resistant sessile organisms that are found in vivo and do not include *Acanthamoeba*.²¹ Increased emphasis on the importance of maintaining good hygiene with soft conventional and reused disposable lenses, using hydrogen peroxide or other disinfection systems that are effective against *Acanthamoeba*, could almost eliminate this severe cause of keratitis. Contact lens practitioners, the contact lens industry, and the Department of Health all have roles to play in achieving this aim—not least by holding back licences from disinfection systems that are ineffective against *Acanthamoeba*.

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Macular degeneration and early menopause: a case-control study

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Age related macular degeneration is a main cause of blindness in elderly people. The disease affects the macula lutea and results in a central scotoma in the visual field. The cause of the disease is poorly understood, and treatment is only successful in a few cases. Recent findings of an association between use of postmenopausal exogenous oestrogens and a lower risk of macular degeneration suggest a role for oestrogens in the pathogenesis of the disease.¹ We hypothesised that a higher risk of macular degeneration occurs in women with an early menopause.

Subjects, methods, and results

Data were obtained from the Rotterdam study.² All women aged 55 years and over who were resident in the suburb of Ommoord in Rotterdam were invited for the study. The response rate was 78% (4616/5918). Macular degeneration was considered to be present if either atrophic or neovascular age related macular degeneration was visible on colour pictures of the fundus. Age at and type of menopause were self reported and checked by a study physician. The cause of menopause was classified as natural hysterectomy, removal of one or both ovaries with or without hysterectomy, radiotherapy, or drug treatment. Overall, 3680 women (80%) had gradable fundus photographs of at least one eye and complete data on the menopause. Macular degeneration was present in 59

women (1.6%). We matched each case with five controls born in the same year who did not have macular degeneration, resulting in 295 controls. We calculated relative risks with 95% confidence intervals using conditional logistic regression analysis.

The table shows the relative risk of macular degeneration according to age and type of menopause. No significant excess risk was found for early spontaneous menopause and early hysterectomy. Women with early menopause after removal of one or both ovaries had a significantly increased risk of macular degeneration compared with women who had their menopause at 45 years or later (relative risk 3.8;

Relative risk of macular degeneration by type of menopause. Values are numbers of women.

	Macular degeneration		Relative risk (95% confidence interval)*
	Absent	Present	
Age at menopause (years):			
≥45	253	45	1.0
<45	42	14	1.9 (1.0 to 3.8)
Cause of early menopause:			
Spontaneous	30	6	1.2 (0.5 to 3.3)
Surgical:			
Hysterectomy only	4	1	2.1 (0.2 to 24.9)
Oophorectomy†	6	5	3.8 (1.1 to 12.6)
Irradiation	1	2	4.2 (0.6 to 30.2)
Drug use	1	0	—

*Adjusted for age.

†Unilateral or bilateral oophorectomy with or without hysterectomy.

95% confidence interval 1.1 to 12.6). Of 16 women whose menopause was the result of oophorectomy at 45 years or later, none had macular degeneration. This indicates a significant excess risk of early compared with late menopause by oophorectomy (exact lower 95% confidence limit 1.7).

Comment

Our findings suggest that early artificial menopause increases the risk of macular degeneration and are compatible with the view that oestrogens have a role in the pathogenesis of the disease.¹ The association between early artificial menopause and macular degeneration may be related to an early decline of oestrogen production or, alternatively, to factors related to operation or irradiation. The absence of an increased risk of macular degeneration associated with oophorectomy at 45 or over favours an association with the arrest of oestrogen production. Combining unilateral and bilateral oophorectomy may have resulted in an underestimation of this association. We found no association with early spontaneous menopause. The mean age of women with early spontaneous menopause was similar to that of women with early medically induced menopause. The results may be affected by misclassification since women tend to underestimate the age of spontaneous cessation of menses.

The mechanism of the association is unknown. Previous studies suggested that surgical menopause with removal of both ovaries increases the risk of cardiovascular disease and atherosclerosis.³⁻⁵ Possibly, similar factors underlie the development of macular degeneration.

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Lower respiratory infection and inflammation in infants with newly diagnosed cystic fibrosis

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The nature and timing of lower respiratory infections in infants with cystic fibrosis is largely unknown¹ because infants do not produce sputum and throat cultures may not predict lower respiratory pathogens.² We performed a prospective cross sectional study of an unselected cohort of infants with cystic fibrosis in which bronchoalveolar lavage was used to determine lower respiratory infection and inflammation during the first three months of life.

Patients, methods, and results

The state of Victoria, Australia (66 000 births per year) has a cystic fibrosis screening programme, all patients being managed by one centre. Between February 1992 and September 1994 we recruited 45 (27 boys) of the 52 infants with newly diagnosed disease; 32 were identified by screening, 12 from meconium ileus, and one by failure to thrive, and all cases were confirmed by sweat testing. Sixteen infants had respiratory symptoms, and seven of them were receiving oral antibiotics when bronchoalveolar lavage was performed at a mean age of 2.6 (SD 1.6) months. Nine otherwise healthy infants (five boys) aged 2-33 (median 8) months who were undergoing bronchoscopy for stridor served as controls.

Lavage fluid was tested by immunofluorescence, cultured for respiratory viruses, and plated on to selective media for quantitative bacteriology. Total and differential cell counts were performed in a counting chamber and after cytocentrifugation respectively. Interleukin 8 was assayed by enzyme immunoassay (Medgenix Diagnostics, Belgium). At bronchoscopy samples from the oropharynx were also cultured

for bacteria. Serum antibodies to *Pseudomonas aeruginosa* lipopolysaccharide and exotoxin A were measured by an enzyme immunoassay. To adjust for upper respiratory contamination, lower respiratory infection was defined as bacterial counts $\geq 10^8$ colony forming units/l or the presence of respiratory viruses in lavage fluid.³ Comparisons were by χ^2 or Fisher's exact test and the two sample *t* test. The study was approved by the human ethics committee.

Fifteen bacterial and three viral infections were identified in 17 infants (38%; 95% confidence interval 24% to 54%). *Staphylococcus aureus* was present in 14, including three with mixed *S aureus* and *Haemophilus influenzae* infections; *Moraxella catarrhalis* was detected in another. Respiratory syncytial virus and parainfluenza virus type 3 were present in three infants, including one with *S aureus* infection. Four of the seven infants receiving antibiotics had *S aureus* infection and one had parainfluenza virus type 3 in lavage fluid. Throat cultures from 27 infants grew *S aureus*; *H influenzae* was detected in three cases and Gram negative bacilli in six others (*Escherichia coli* (three), *Klebsiella pneumoniae* (two), and *P aeruginosa* (one)). No controls had bacterial counts $\geq 10^8$ colony forming units/l, although *S aureus* and *H influenzae* were grown from throat cultures in three controls. Serum *P aeruginosa* antibodies were absent in cases and controls.

Infection was not predicted by sex or cystic fibrosis genotype. Infected infants had lower mean Brasfield chest x ray scores (20.1 v 21.9; *P*=0.07). Although throat swabs were sensitive for lower respiratory infection (15/15), poor specificity (14/30) meant a positive culture had a predictive accuracy of 48% (30% to 67%). Eleven of the 17 infected infants (65%) had

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