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 unknown[1] 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 immunoadsorbent assay (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 immunoadsorbent assay. 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

symptoms compared with five of the 28 (18%) without infection (P=0·004). Two of these five were taking antibiotics and another had evidence of pulmonary aspiration. The table shows significant differences for total cell count, macrophage and neutrophil counts, and interleukin 8 concentrations between 14 infected infants and 20 non-infected infants, and nine controls.

Inflammatory geometric cells and interleukin 8 concentrations in bronchoalveolar lavage fluid. Figures are means (95% confidence intervals)

	Infants with cystic fibrosis		
	Infected (n=14)*	Non-infected (n=20)†	Controls (n=9)
Cell concentrations (×10⁶/l):			
Macrophages	166 (87 to 316)§	63 (32 to 122)	85 (53 to 136)
Neutrophils	259 (70 to 968)‡	17 (8 to 36)	4 (1 to 17)
Lymphocytes	9 (2 to 29)	3 (2 to 4)	7 (3 to 16)
Epithelial cells	6 (2 to 25)	11 (5 to 24)	10 (3 to 31)
Squamous cells	0·4 (0·3 to 0·5)	0·3 (0·2 to 0·5)	0·2 (0·1 to 0·3)
Total cell count	794 (384 to 1640)‡	129 (75 to 223)	123 (74 to 204)
Interleukin 8 (ng/l)	2013 (1164 to 3784)‡	26 (13 to 51)	23 (8 to 62)

*Defined as $\geq 10^6$ colony forming units of pathogenic bacteria/l or positive viral immunofluorescence or culture.
†Defined as $< 10^6$ colony forming units of pathogenic bacteria/l and negative results in viral studies.
‡Significant difference between infected infants and non-infected infants or controls by two sample *t* test after logarithmic transformation before analysis; for both comparisons $P < 0{\cdot}001$.
§Significant difference between infected infants and non-infected infants or controls by two sample *t* test after logarithmic transformation before analysis; for both comparisons $P < 0{\cdot}05$.

Comment

Within the first 3 months of life lower respiratory infection, primarily by *S aureus*, was present in almost 40% of infants (17/45) with cystic fibrosis. More than one third were symptom free. Infection was overestimated by throat cultures, suggesting that for many subjects bacterial pathogens remain confined to the upper airways. Although no newly diagnosed case showed *P aeruginosa* infection, follow up cultures in this cohort have shown that the organism may infect the lower respiratory tract as early as 4 months of age.

We found respiratory pathogens to be important causes of inflammation. Although neutrophils within the lower respiratory tract were associated with respiratory symptoms, not all infected subjects had inflammatory cells or symptoms. In addition, not all respiratory symptoms or inflammation were due to infection: in two cases there was evidence that aspiration lung disease was the most likely cause. By comparison, adults with chronic cystic fibrosis and minimal lung disease consistently showed respiratory inflammation.[4] Although infants with newly diagnosed disease probably have normal lung structure, repeated episodes of infection or aspiration in young children may result in chronic respiratory inflammation and lung injury.[5]

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WORDS TO THE WISE

Turning the worm

The *vermiform* appendix is shaped like a worm, the adjective being derived from the Latin *vermis*, a word that is also used to describe the long, thin, middle lobe of the cerebellum. *Vermis* crops up in odd places. In Middle English the idea of a worm encompassed all small things that crept, crawled, or wriggled; reptiles and insects were worms, too. Since small, wriggling creatures are often unpleasant to associate with, the word began to be used for any creature that seemed unpleasant, and by the 15th century we find marmosets being referred to as worms. A Latinate alternative, *vermin*, was subsequently introduced and has been used to describe small, unpleasant creatures ever since.

Similar wormy confusion occurs elsewhere. For centuries in Europe and north Africa a scarlet dye was extracted from the crushed bodies of female *kermes* insects. The name of the insect derives from the Sanskrit word for red dye, *krmija*, the literal meaning of which is "produced by a worm," *krmi* being the Sanskrit for worm. *Kermes*, in turn, has given us both *crimson* and *carmine*.

With the discovery of the New World came a better red dye, produced from the *cochineal* insects of South America. These poor creatures were originally thought to be a kind of cactus berry, and their name is distantly derived from the Greek word for berry, *kokkos*. Subsequently identified as insects, they were then (naturally enough for the times) referred to as little worms or, in Latin, *vermiculi*. The dye they produced was called *vermilion*. Later, the Italians gave us *vermicelli*, a pasta shaped like small worms.

Wormwood is a flowering plant of the daisy family, known in Germany as *Wermuth*. In ancient Greece it was called *apsinthion*, from which comes its French name, *absinthe*, which is also the name of the alcoholic beverage (now illegal) made from the plant. Absinthe was prepared by soaking wormwood in a solution of 85% alcohol, thus extracting a variety of substances from the plant: chlorophyll, which gave the drink its green colour, absinthin, which causd the characteristic bitterness; and thujone, a central nervous system stimulant, which could produce sexual excitement, hallucinations, convulsions, and the long term neurological debility called *absinthism*. When the alcohol was diluted with water (poured over a sugar lump in the traditional manner) some of these substances would precipitate out of solution to produce a characteristic milky cloudiness.

Although wormwood extracts have been recommended as a means of purging intestinal worms, the German name hints at a different derivation for the word: from the Old English *wer-mod*, "man-courage," perhaps in reference to the excitatory effects of the thujone. (*Wer* has come down to us intact in *werewolf*, while *mod* has since been transformed into *mood*.)

Another wormwood extract is still with us. If the plant is soaked in white wine the more dilute alcohol picks up bitterness but very little toxin. The resulting liqueur is named from the French pronunciation of *Wermuth*—it is called *vermouth*.—GRANT HUTCHISON *is a consultant anaesthetist in Dundee*