Original Article

A diagnosis of eosinophilic esophagitis is associated with increased life insurance premiums

D. A. Leiman,^{1,2} B. Kochar,³ S. Posner,⁴ C. Fan,⁵ A. Patel,^{1,6} O. Shaheen,³ C. Y. Keller,⁵ N. T. Koutlas,⁵ S. Eluri,³ E. S. Dellon³

¹Division of Gastroenterology, Duke University, Durham, NC, ²Duke Clinical Research Institute, Durham, NC, ³Division of Gastroenterology, University of North Carolina, Chapel Hill, NC, ⁴Department of Medicine, Duke University, Durham, NC, ⁵Department of Medicine, University of North Carolina, Chapel Hill, NC, and ⁶Durham VA Medical Center, Durham, NC

SUMMARY. Eosinophilic esophagitis (EoE) is a chronic disease that can be diagnosed at any age, but is not associated with malignancy and does not shorten lifespan. It remains unknown whether an EoE diagnosis affects insurability or insurance premium costs. We therefore aimed to determine whether a diagnosis of EoE affects the costs of life insurance. Our investigation was a secret shopper audit study whereby we contacted national insurance companies in the United States to evaluate the effect of a diagnosis of EoE on life insurance premiums. We constructed standardized case scenarios for males and females, including a 25-year-old and a 48-year-old without other comorbid conditions, who either had or did not have a diagnosis of EoE. Companies were asked for their best estimate for a \$100,000 whole life insurance policy. Comparisons between median premiums were made using the Mann-Whitney U test. There were 20 national life insurance companies contacted and a total of 73 quotes were obtained. The median premium rate was similar for EoE and non-EoE cases at the younger age (\$828 [IQR \$576–1,020] vs. \$756 [IQR \$504–\$804]; $P = 0.10$). However, the premium for the older case without EoE was 19% less expensive compared to a case with EoE (\$1990 [IQR \$1,248–2,350] vs. \$2,375 [IQR \$2,100–2568]; $P = 0.02$). This finding was not explained by sex or state of residence. Based on these findings, we conclude that life insurance premiums are significantly more expensive in the older patient case with EoE when compared to the same case without EoE. Patients with EoE and their providers should be aware of the additional cost associated with this diagnosis.

KEY WORDS: eosinophilic esophagitis, insurance premiums, life insurance.

INTRODUCTION

Eosinophilic esophagitis (EoE) is a chronic immune antigen-mediated disease that is diagnosed in children

and adults throughout the lifespan.^{1,2} It is an increasingly recognized clinicopathologic entity with a prevalence of approximately 1 in 2000, similar to pediatric inflammatory bowel disease.³ There is currently no cure for EoE and there is evidence that the natural history is of chronic inflammation leading to stricturing and narrowing, though this is not inexorable in every patient.^{4,5} Although therapy is often required indefinitely, EoE is not considered to be a premalignant condition, has not been associated with cancer, and has not been shown to shorten lifespan.^{6,7}

Given the chronic nature of this condition, patients with EoE have significantly higher healthcare utilization than similarly aged controls.⁸ These costs are related to endoscopic utilization for both diagnosis and monitoring, high prices for medications,⁹ and increased grocery costs for specialized diets.¹⁰ In addition to symptoms and potential complications such as food impaction, malnutrition, esophageal

Address correspondence to: David A. Leiman, MD, MSHP, Assistant Professor of Medicine, Division of Gastroenterology, Duke University School of Medicine, 2400 Pratt Street, Durham, NC 27705, USA. E-mail: david.leiman@duke.edu
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strictures, and perforation.^{11,12} EoE is associated with decrements in quality of life.^{13–18} While EoE can be associated with rare connective tissue diseases, autoimmune conditions, and other unusual syndromes,^{19–22} the majority of patients are often otherwise healthy with the exception of concomitant atopic disorders.^{23,24} Nevertheless, making the diagnosis of EoE can be life-altering for patients, some data suggest that patients may be given this label without an appropriate diagnostic evaluation,^{25,26} and the impact this has on a patient's overall life, not just medical management, may be substantial.

It is often unappreciated that a diagnosis can have economic implications beyond medical care for patients.¹³ We have observed in our clinical practice that a diagnosis of EoE has led to either higher life insurance rates or an inability to obtain life insurance in otherwise healthy EoE patients. While this has been assessed in Barrett's esophagus (BE),²⁷ it is unknown whether the diagnosis of EoE affects insurability or insurance premium costs. Therefore, we aimed to determine whether a diagnosis of EoE affects the costs of life insurance.

MATERIALS AND METHODS

We searched publicly available United States (U.S.) insurance registries to identify national companies selling life insurance policies in three separate states, North Carolina, Wisconsin, and California. Companies that sold insurance in a single state or only serviced corporate clients were excluded. The companies servicing the largest number of clients among those identified were subsequently contacted as part of a prospective audit study to evaluate the effects of a diagnosis of EoE on life insurance premiums.

We created two similar male and female case scenarios, including a 25-year-old Caucasian student ('young') and a 48-year-old Caucasian architect ('mature'), both without other comorbid conditions except for a diagnosis of EoE. Test cases had identical body mass index (BMI), which was within the normal range, and were nonsmokers. The motivation to purchase insurance in the young case was 'financial planning for the future' and for the mature case was 'financial planning for my children's future.' We selected a residential address for each test case in three locations, North Carolina, Wisconsin, and California. The identical scenarios were also used in completely healthy cases without EoE. Therefore, there were a total of four case scenarios assessed: young with and without EoE, and mature with and without EoE.

Companies were directly contacted via phone by the research team. During telephone interviews, companies were asked for their best estimate for a whole life insurance policy in the amount of \$100,000 for one of the above four case scenarios. Individual calls were made for each of the scenarios, in each of the

three residential regions. We chose to request a whole life insurance policy given the expected stability of annual premiums and their potential as part of estate planning, which was justification included in each case scenario. Quotes were either provided over the phone or in follow-up e-mails, and were in U.S. dollars on an annual basis.

For analysis, comparisons between median premiums for each age group were made using the Mann-Whitney U test. The primary comparison of interest was premium rates for EoE cases versus non-EoE cases. In addition, stratified comparisons were made by patient sex and state of residence for the case scenarios. The University of North Carolina Institutional Review Board deemed this study exempt from ongoing review.

RESULTS

A total of 20 national life insurance companies were contacted in North Carolina, Wisconsin, and California and 73 quotes were obtained. More quotes were obtained for the female case ($n = 44$) than the male case ($n = 29$) and for North Carolina ($n = 38$) than either California ($n = 16$) or Wisconsin ($n = 19$).

The overall quoted rate for non-EoE cases was \$1,020 (IQR \$768–\$2,028) and for EoE cases was \$1,128 (IQR \$828–\$2,375; $P = 0.3$), regardless of age or sex. Premiums were uniformly lower for the younger case than for older cases and were generally lower for female versus male cases. Premiums of any age in North Carolina, the state for which there were the most robust data, were similar for the cases without EoE (male: \$1,020 [IQR \$864–\$2,472]; female: \$1,056 [IQR \$804–\$2,100]) and with EoE (male: \$1,469 [IQR \$713–\$2,154]; female: \$1,020 [IQR \$762–\$1,915]). Across all states, males with EoE had lower quotes compared to males without EoE. However, neither sex nor the state from which quotes were obtained was significantly associated with premium rates (Table 1).

For the 25-year-old test case irrespective of sex, the quoted rates were \$756 (IQR \$504–\$804) and \$828 (IQR \$576–\$1,020; $P = 0.1$) for the non-EoE and EoE cases, respectively. However, the median premium rate irrespective of sex for the 48-year-old case without EoE ($n = 26$) was \$1,990 (IQR \$1,248–\$2,350), which was 19% less expensive when compared to a case with EoE ($n = 14$) at \$2,375 (IQR \$2,100–\$2,568; $P = 0.02$) (Fig. 1). In a sensitivity analysis, after removing data from California, which had the largest discrepancy in quoted premium rates between EoE and non-EoE cases, the difference in rates between 'mature' cases with and without EoE remained significant ($P = 0.01$). While there was still no significant difference between the 'young' cases with and without an EoE diagnosis, there was a trend ($P = 0.06$).

Table 1 Median life insurance premiums for test cases, in United States dollars

	EoE Dollars (n)	Without EoE Dollars (n)	P value
Age			
25 ('Young')	828 (14)	756 (19)	0.1
48 ('Mature')	2375 (14)	1990 (26)	0.02
Sex			
Male	1030 (14)	1848 (15)	0.79
Female	1572 (14)	1008 (30)	0.15
State			
NC	1030 (16)	1044 (22)	0.75
WI	1554 (4)	1128 (12)	0.9
CA	2303 (8)	1008 (11)	0.14
Non-NC	2070 (12)	1008 (23)	0.21

CA, California; EoE, eosinophilic esophagitis; NC, North Carolina; WI, Wisconsin.

Fig. 1 Mature cases with a diagnosis of eosinophilic esophagitis (EoE) had significantly (*, $P = 0.02$) higher life insurance premiums compared to those without a diagnosis of EoE.

DISCUSSION

EoE is a chronic condition that impacts patients in a variety of ways outside of traditional symptoms and esophageal complications. For example, it is associated with high health care costs as well as decrements in quality of life,^{8,13} and we investigated whether that insurability might be an issue as well. In our audit study of national insurance companies across several states, we found that life insurance premiums were significantly more expensive in the case of an older patient with a diagnosis of EoE when compared to similar cases without a diagnosis of EoE. This finding does not seem to be explained on the basis of sex or state of residence. While consistent with our hypothesis, this is nevertheless unexpected as there are no data to suggest EoE is associated with malignancy or that patients with EoE have a diminished life expectancy.

It is somewhat difficult to contextualize our results within the EoE literature as there are no other studies examining this particular issue. However, audit and 'secret shopper' studies have been used in other conditions to reveal discrepancies in treatment between

certain subgroups that might not otherwise be anticipated in usual practice.^{28,29} For example, a previous study demonstrated that a diagnosis of BE was associated not only with increased health insurance premiums but also with increased life insurance premiums.²⁷ This finding affirmed a similar previous conclusion that long-term survivors of childhood cancer have significant challenges in obtaining life insurance after being cured.³⁰ Patients with inflammatory bowel disease also face this issue because, despite similar life expectancy to age-matched controls, concerns have been raised over their insurance premium rates.^{31,32} Within this framework, a diagnosis alone adversely affects patients' insurability. In the case of BE, the risk of esophageal adenocarcinoma increases substantially over the general population, and this could potentially be used to justify their increased insurance premiums, but overall life expectancy is not significantly different than the general population.³³ No data exist to suggest an increase in cancer rate or diminished life expectancy for patients with EoE,^{5,34} making increased costs of a life insurance policy unjustified.

While healthcare utilization may be high in EoE patients, it remains unclear why this diagnosis would translate to higher life insurance premiums. Also, it is unknown why only older patients with EoE would bear a burden of significantly higher premiums. It is possible that at a perceived older age the presence of any chronic disease state would lead to larger premiums, though no such conclusions can be drawn from the current study. It was also unexpected to find collectively higher premium quotes for males without EoE compared to males with an EoE diagnosis. This may be a reflection of our sample and could be explained on the basis that there were more 'mature' male quotes in the group without EoE compared to more 'young' quotes in the males with EoE group. This unequal distribution could have affected the average costs by age in males seen in our study. Along with the unique medical needs of EoE patients, these finding may be an important consideration in the management of the large cohort of pediatric EoE patients as they transition into adult care.^{35,36}

There are also some potential limitations in interpreting our results. Ultimately, most people obtaining individual plans for life insurance are subject to more comprehensive testing that can include a physical exam and review of medical records to accurately establish a risk assessment.³⁷ The quotes we obtained represent estimates, which may be intentionally conservative on the part of underwriters given the patient cases had 'a diagnosis,' though we cannot conclude that from this study. However, during phone interviews cases were instructed to volunteer that their EoE diagnosis was made during endoscopy, managed on medication, was an allergic condition, and did not increase the risk of cancer. While individual calls could vary, the phone interviews and constructed

cases were strengths of the study. Nonetheless, we cannot conclude from this study the extent to which individual components, *e.g.*, need for endoscopy, may have affected the insurance quote and this could represent an area of future investigation. Despite purposely picking large national companies and three distinct regions, we were able to only contact a small sample of insurance companies in three states so our results may not be generalizable to other areas in the United States. Additionally, we were not able to assess health insurance rates. Given the current uncertainty in the healthcare insurance marketplace, an evaluation of how EoE affects health insurance premiums would not be feasible, and any results obtained may not be durable. Ultimately, this may represent a future direction for further investigation.

In summary, we found that a diagnosis of EoE alone can be associated with increased life insurance premiums. While many Americans continue to obtain life insurance coverage through the workplace, and therefore would be eligible for a group rate, these results highlight important considerations for labeling patients with a chronic disease, and re-emphasize the need for a rigorous diagnostic evaluation that leads to a confirmed diagnosis of EoE.^{11,26,38,39} Our results are consistent with previous findings in other conditions.^{27,30} Although broader conclusions cannot be drawn from this study, our findings may demonstrate larger insurance marketplace trends. Replicating our findings in similar conditions like allergic asthma may help clarify this relationship. Further work to educate insurance companies on the potential risks associated with EoE is warranted, and will be important from a patient advocacy perspective. Additionally, the development of a new international classification of disease (ICD) code for undifferentiated esophageal eosinophilia may mitigate some of the risk in labeling patients, especially as they undergo evaluation prior to a confirmed diagnosis. For now, patients with EoE and their providers should be aware of and counsel patients about the additional lifestyle ‘costs’ associated with this diagnosis.

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