Healthcare costs associated with moderate-to-severe atopic dermatitis: A Danish register-based study

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Poster #

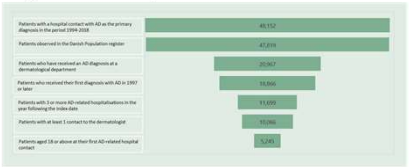
Introduction

- There is currently a lack of up-to-date knowledge regarding the cost-of-illness of atopic dermatitis (AD).
- In the coming years, several new advanced therapies are anticipated to be introduced as treatment for patients who are most severely affected by AD.
- When assessing the cost-effectiveness of emerging biological therapies, it becomes increasingly important to establish the economic burden that patients with moderate-to-severe AD place on the healthcare sector and on society.
- For that reason, this register-based study aimed to estimate the cost-of-illness of moderate-to-severe AD.

Materials and Methods

- The study cohort comprised of Danish adults with AD as a primary diagnosis determined by a dermatology department between 1997 and 2018, as identified in the Danish National Patient Register (NPR).
- Figure 1 presents the inclusion criteria for the study population. As the NPR does not contain information on severity, we defined the moderate-to-severe AD population as patients who have had at least three hospital contacts (admissions or outpatient visits) in the year following the index date, i.e. the date of the first AD-related hospital contact. One of these contacts had to have AD registered as primary diagnosis by a dermatology department. Further, patients must have had at least one consultation with a private practice dermatologist. After having restricted the sample, we identified 5,245 patients with moderate-to-severe AD[1].

Figure 1. Inclusion process



Note: The figure presents the remaining number of patients in the sample (inside the bar) after each of the exclusion criteria listed in the horizontal axis.

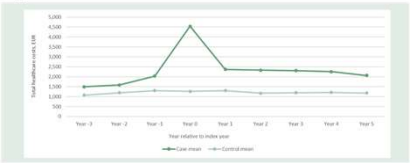
- For each AD patient, we identified three controls through the Central Person Registry, matched on gender, year of birth and region of residence in the index year with no history of AD in the NPR.
- Using information from the Danish Case Mix register, which is the NPR with added diagnosis-related groups (DRG) tariffs, and the Danish National Health Service Register for Primary Care, we estimated the actual direct costs for primary sector contacts as well as AD and non-AD-related outpatient contacts and hospital admissions for cases and controls in the period from three years before to five years after the index date.
- Total healthcare costs (i.e. primary sector and hospital sector costs) attributable to AD for a given year is defined as the total average healthcare costs for AD patients minus the total average healthcare costs for controls.
- In addition to this, we used information on income and earnings from the Danish Registers on Personal Income and Transfer Payments to assess the productivity loss associated with moderate-to-severe AD.
- A general limitation to the method is that we cannot determine the true incidence date nor identify the true prevalence of AD from the NPR. This gives a risk of having people suffering from mild AD included in the control group. A further limitation is that out of pocket expenditures for the AD patients are not accounted for in the study.

Results

Total healthcare costs

- Figure 2 presents the average healthcare costs per year for patients with moderate-to-severe AD for three years prior to and five years after the patients' first AD-related hospital contact and for their matched controls.
  - The average difference between cases and controls in healthcare costs was estimated to be EUR 512 per year in the three years prior to the index date (P-value < 0.0001).
  - The highest difference was found in the first year following the index date (year 0), with an estimated healthcare cost of EUR 4,545 for cases and EUR 1,266 for the matched controls (P-value < 0.0001).
  - The average difference in the total yearly healthcare costs between cases and controls more than doubled in the years following the index year (years 1 to 5) to EUR 1,052 compared with the three years prior to the cases' first AD-related hospital contact yielding a total attributable healthcare cost of EUR 10,075 in the study period.

Figure 2. Total healthcare costs

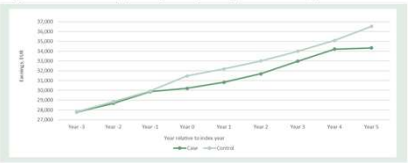


Note: The figure presents the mean healthcare costs in the selected sample of cases and in its matched sample of controls in each year relative to the index date.

Productivity loss

- Figure 3 presents the average individual earnings for cases and controls relative to the index year for patients with moderate-to-severe AD and their controls.
  - We found a statistically non-significant difference of EUR -91 (P-value = 0.39) in yearly earnings in the three years prior to the cases' first AD-related hospital contact compared with their controls.
  - However, we found a statistically significant difference in average yearly earnings in the period after the cases' first AD-related hospital contact. This difference amounts to an average of EUR 1,340 per year in productivity loss, yielding a total productivity loss of EUR 8,311 during the study period.
- One potential explanation for this is that we found the probability of receiving disability insurance to increase 4.2 times more for cases than for the matched controls in the five years following the index date.

Figure 3. Earnings as proxy for productivity loss



Note: The figure presents the mean yearly earnings for the selected sample of cases and its matched sample of controls in each year relative to the index year.

Conclusion

- This study provided population-based evidence of the substantial economic burden of moderate-to-severe AD compared with a group of matched controls. We found significant healthcare costs attributable to AD, corresponding to total attributable healthcare costs of EUR 52.8M for the moderate-to-severe AD population during the study period.
- Moreover, we found that patients with moderate-to-severe AD have a reduced labour market activity after being diagnosed with AD compared with the matched controls. We estimated the resulting productivity loss associated with AD to be EUR 43.6M during the study period, representing a substantial societal cost-of-illness and loss of income to the AD population who are taking out significantly more disability insurance than their matched controls.

Funding and disclosures
This study was supported by LEO Pharma Denmark. Andreas W. Brenneche and Dennis Trangbæk are employees at LEO Pharma Denmark. Incentive is a paid vendor of LEO Pharma Denmark. Mikkel Pedersen and Maria Madsen are employees at Incentive.

Presented at the Virtual ISPOR Europe 2020 Conference.

1. Please note that compared to the accepted abstract, the AD patient population is defined slightly differently here, implying that the results reported in the abstract and this poster are not 100% comparable.