Incidence of Acromegaly in the United States: A Claims-Based Analysis

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Michael S. Broder[1], Eunice Chang[1], Maureen P. Neary[2], William H. Ludlam[3]

[1] Partnership for Health Analytic Research, LLC, Beverly Hills, CA; [2] Novartis Pharmaceuticals Corporation, East Hanover, NJ; [3] Chiasma, Inc., Newton, MA, Previously of Novartis Pharmaceuticals Corporation, East Hanover, NJ

BACKGROUND

- Acromegaly is a rare, slowly progressive disease resulting from excessive growth hormone secretion.[1]
- Given the lack of current US epidemiological data, we wanted to better understand the incidence of this endocrine disorder.

OBJECTIVE

- The study objective was to estimate the annual incidence of acromegaly in the US – overall and stratified by age and gender.

METHODS

Study Design and Data Source

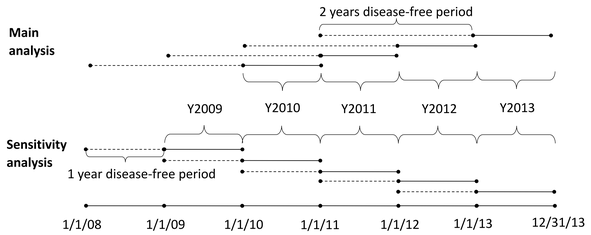
- A retrospective cohort study of acromegaly patients (<65 years old) using two HIPAA-compliant commercial health insurance claims databases from 2008-2013: Truven Health MarketScan® Commercial Claims and Encounters Database and IMS Health PharMetrics.

Study Population and Study Timeframe

- Patients had to have ≥2 claim with acromegaly (ICD-9-CM: 253.0), or one claim with acromegaly and one claim for pituitary tumor (ICD-9-CM: 237.0x), pituitary surgery (hypophysectomy), or cranial stereotactic radiosurgery in the same year 2009-2013.

Study Cohorts

- **Main analysis**: Patients were continuously enrolled in the measurement year (2009, 2010, 2011, 2012 or 2013), and had no evidence of acromegaly in the **1 prior** year.
- **Sensitivity analysis**: Patients were continuously enrolled in the measurement year (2010, 2011, 2012 or 2013), and had no evidence of acromegaly in the **2 prior** years



Incidence Rate Measures

- **Main analysis**: (Number of acromegaly patients in the three-year cohort) ÷ (Number of all continuously enrolled people in that year and 2 years prior)
- **Sensitivity analysis**: (Number of acromegaly patients in the two-year cohort) ÷ (Number of all continuously enrolled people in that year and year before)

Analysis

- Analysis were performed using SAS© version 9.4 (SAS Institute, Cary, NC).

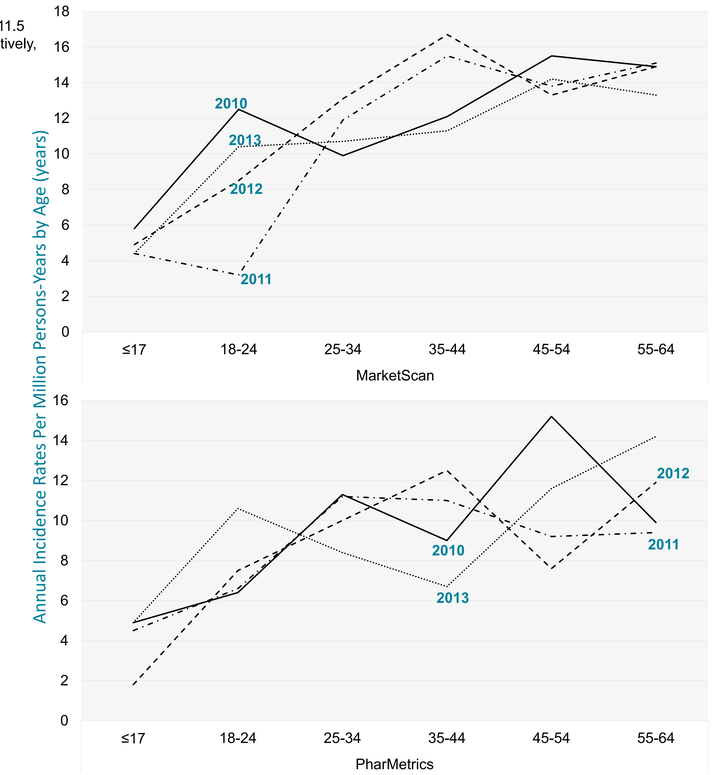
RESULTS

- About 1400 patients (from 1238 to 1542 in MarketScan and 988 to 1141 in PharMetrics) were identified as having acromegaly in each year in 2009-2013.
  - About 50% were females in both datasets.
- Overall, the annual annual incidence rates were slightly higher from the MarketScan data compared to PharMetrics.
- In the main analysis, the annual rates were between 10.6-11.7 PMPY in MarketScan and between 8.3-9.6 PMPY in PharMetrics.
  - Gender-specific rates were similar, ranging 11.1-12.2 PMPY in females and 10-11.5 PMPY in males in MarketScan, and 8.3-10.5 PMPY and 7.4-10.3 PMPY, respectively, in PharMetrics.

Annual Incidence Rates Per Million Person-Years (PMPY)
Main Analysis Results

		MarketScan				PharMetrics			
Gender	**Age**	**2010**	**2011**	**2012**	**2013**	**2010**	**2011**	**2012**	**2013**
Female	≤17	7.5	2.8	3.2	0.6	3.7	3.8	2.5	3.4
	18-24	14.6	1.6	7.9	9.9	6.5	7.3	10.1	16.6
	25-34	15.8	18.7	16.6	12.0	12.9	13.9	9.7	8.9
	35-44	9.0	16.2	21.2	13.5	10.3	13.3	14.4	9.5
	45-54	16.7	14.1	10.1	16.4	14.4	9.2	6.4	12.1
	55-64	12.2	14.2	15.4	15.0	6.5	10.8	9.6	13.9
	All	**12.2**	**11.4**	**12.0**	**11.1**	**9.0**	**9.4**	**8.3**	**10.5**
Male	≤17	4.2	5.9	6.6	8.0	6.0	5.1	1.2	6.4
	18-24	10.5	4.7	9.1	10.9	6.4	5.9	5.0	4.9
	25-34	3.1	4.0	9.0	9.3	9.5	8.2	10.3	7.9
	35-44	15.6	14.7	11.6	8.9	7.5	8.5	10.4	3.7
	45-54	14.2	13.4	16.9	11.8	16.1	9.1	9.0	11.1
	55-64	17.9	16.1	14.4	11.3	13.7	7.8	14.5	14.5
	All	**11.2**	**10.5**	**11.5**	**10.0**	**10.3**	**7.4**	**8.3**	**8.6**
All	≤17	5.8	4.4	4.9	4.4	4.9	4.5	1.8	4.9
	18-24	12.5	3.2	8.5	10.4	6.4	6.6	7.5	10.6
	25-34	9.9	11.9	13.1	10.7	11.3	11.2	10.0	8.4
	35-44	12.1	15.5	16.7	11.3	9.0	11.0	12.5	6.7
	45-54	15.5	13.8	13.3	14.2	15.2	9.2	7.6	11.6
	55-64	14.9	15.1	14.9	13.3	9.9	9.4	11.9	14.2
	All	**11.7**	**11.0**	**11.7**	**10.6**	**9.6**	**8.4**	**8.3**	**9.5**

- Incidence varied by age, with the highest rate in those aged between 35-64 years (up to 16.7 PMPY in MarketScan and up to 15.2 PMPY in PharMetrics) and
  - lowest in those <17 years: 4.4-5.8 PMPY and b1.8-4.9 PMPY in MarketScan and PharMetrics, respectively.
- In the sensitivity analysis, rates were between 12.2-15 PMPY in MarketScan and 9.6-11.9 PMPY in PharMetrics, which were slightly higher than in the main analysis.



LIMITATIONS

- Limitations include the inability to identify undiagnosed patients and use of claims without clinical confirmation to identify cases.
- Results may not be representative of the general acromegaly population since this analysis included only patients with commercial insurance.
- This study is based on claims alone, without verification in medical charts, so cases may have been missed due to miscoding of ICD-9-CM codes.
- These results are not representative of older patients since this study only examined patients under age 65.
- A limitation of using claims data to estimate disease incidence is the inability to know with certainty that the first diagnosis seen in the data represents the first clinical diagnosis of the condition. To address this issue, different patient cohorts were identified based on years of continuous enrollment.

CONCLUSIONS

- **The current incidence of acromegaly in the US is up to 12 PMPY, which may be up to 4 times higher than the previously reported estimate based on data from much older studies in non-US patients.[2-8]**
- **This study indicates incidence rates do not differ by sex but tend to be lowest in those ≤17 years of age.**
- **Based on the study estimate of incidence, there are approximately 3000 new cases of acromegaly per year in the US.**

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