Top 100 Cited Articles in Thyroid Cancer:
A Bibliometric Analysis

Tiroid Kanserinde En Fazla Atlı Alan 100 Makale:
Bibliyometrik Bir Analiz

Veysel Barış TURHAN, Abdulkadir ÜNSAL
Department of General Surgery, University of Health Sciences Keçiören Training and Research Hospital, Ankara TURKEY

Abstract

Objective: To identify and analyze the 100 most cited articles on thyroid cancer since 1975, thus, allowing their easy access for researchers in this field. Material and Methods: This study is a bibliometric analysis of research publications acquired from the Web of Science database. We evaluated the first 100 articles receiving the most citations in the field of thyroid cancer since 1975. Then, all research publications were compiled using journal information into different categories based on the study type, country, research centers, authors, and publication dates. All data were reported as percentages, numbers, and graphs. Results: In this study, we listed 8,608 full-length English-language articles. Our findings showed that the most cited article received 4,325 citations to date, while the Journal of Clinical Endocrinology Metabolism, a Thyroid journal, received the most number of citations (n:6531), publishing seventeen of the articles from our study. Also, thirty-two articles were from the field of oncology. The country with the most number of publications was the United States of America (n=70) in the years 2005, 2008, and 2009 (n=8). Conclusion: It is essential to acknowledge the top-cited articles in thyroid cancer since they contain essential information, research, and advances in its treatment. Our analysis of the first 100 articles included the most important papers with the most significant impact on thyroid cancer research. In our list, we acknowledged the most productive authors and institutions along with their research articles.

Keywords: Bibliometric study; citation; thyroid cancer

Anahtar kelimeler: Bibliyometrik çalışma; alıntı; tiroid kanseri

Address for Correspondence: Veysel Barış TURHAN, Department of General Surgery, University of Health Sciences Keçiören Training and Research Hospital, Ankara TURKEY
Phone: +90 507 994 51 41 E-mail: drbaristurhan@hotmail.com

Peer review under responsibility of Turkish Journal of Endocrinology and Metabolism.

Received: 25 Apr 2021 Accepted: 02 Jun 2021 Available online: 21 Jun 2021

DOI: 10.25179/tjem.2021-84035

This is an open access article under the CC BY-NC-SA license (https://creativecommons.org/licenses/by-nc-sa/4.0/)
Introduction

An increasing incidence of thyroid cancer has been observed in the last 50 years. From 1990 to 2013, the global age-standardized incidence rate of thyroid cancer has increased by 20%, with a more significant increase in low-income countries (33%) compared to high-income countries (19%) (1). A large body of research has been published in journals within oncology, surgery, medical, basic sciences, and radiology fields. Although important studies and clinical trials have been conducted on thyroid cancer, most clinicians are not aware of the existence of these studies. However, these publications can significantly improve future treatments for thyroid cancer patients since the decision of clinicians is based on evidence and scientific research of a high impact. Hence, it is required to identify the 100 most cited articles (2). Several bibliometric studies in the past have identified the most cited articles in various fields, such as colon cancer (3), breast cancer (4), general surgery (5), and bariatric surgery (6), which has allowed the medical researchers and personnel in this field to easily access such studies. However, to date, no such research has been conducted to determine the most influential papers in the areas of thyroid cancer research and treatment. This study aimed to identify and analyze the qualities of the top 100 most cited papers in thyroid cancer or related research. Here, we observed how the knowledge related to thyroid cancer has evolved and changed the management of the disease over time. This study served as a reliable reference for the most cited articles on thyroid cancer.

Material and Methods

We obtained the data from the WoS Core Collection database (Clarivate Analytics, USA) of Thomson Reuters. The data were accessed in the WoS database between 1975 and 2021 using the keyword “thyroid cancer” (access date: 04.01.2021). Articles not related to thyroid cancer were excluded from our study, and only the original research articles written in English were included. Our search initially produced 14,467 published articles. Out of which, the first 100 articles with the most citations were evaluated. Due to the differences in publication time between the first 100 articles, the older articles were more likely to receive more citations due to the availability of longer citation time. Due to this bias, we calculated the average number of citations per year (ACY) for each article. Finally, we collected the following information from the top 100 cited articles: the article title, the journals where they were published, the study categories, the country the research was conducted in, the centers where the study was conducted, the authors, and the publication dates. For each research journal, the five-year impact factor (2020) responsible for publishing the articles was also recorded.

Ethical Statement

Since this study is a bibliometric assessment designed as citation analysis, it did not require approval from the ethics committee. The study was performed according to the Helsinki declaration.

Statistical Analysis

Since our study was a bibliometric analysis, no statistical analysis methods were used. All data obtained are presented in the form of tables and bar charts.

Results

In this study, we listed 8,608 full-length articles in English. The 100 most cited articles in our list were published between 1987 and 2017 and are shown in Table 1. The number of citations ranged from 197 to 4,325, with the average number of citations being 427.14±498.55, while the average number of ACY was 45.75±109.35. The most cited article on thyroid cancer was written by Haugen et al. (7) with an ACY of 1081.25, which was published in the Thyroid journal in 2016, while the least cited article was published by Kim et al. in 2012 (8) with 197 citations and an ACY of 24.63. The number of most cited articles peaked in 2005, 2008, and 2009 which included eight publications (Figure 1). In the listed 100 articles, a total number of 42,714 citations were made collectively. The most citations were from the articles published in 2019, with the total citation number being 4,046. These first 100 articles were published in 38 different journals (Table 2).
Table 1. The top 100 cited papers in thyroid cancer.

| Rank | First author | Journal | Title | Published year | Citation | ACY* |
|------|--------------|---------|-------|----------------|----------|-------|
| 1    | Haugen BR, et al. (7) | Thyroid | 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer | 2016 | 4325 | 1081.25 |
| 2    | Davies L, et al. (17) | JAMA-Journal of the American Medical Association | Increasing Incidence of Thyroid Cancer in the United States, 1973-2002 | 2006 | 2219 | 158.50 |
| 3    | Mazzaferri EL, et al. (18) | American Journal of Medicine | Long-Term Impact of Initial Surgical and Medical Therapy on Papillary and Follicular Thyroid-Cancer | 1994 | 1795 | 69.04 |
| 4    | Liaw D, et al. (29) | Nature Genetics | Germline Mutations of the PTEN Gene in Cowden Disease, an Inherited Breast and Thyroid Cancer Syndrome | 1997 | 1489 | 64.74 |
| 5    | Kimura ET, et al. (30) | Cancer Research | High Prevalence of BRAF Mutations in Thyroid Cancer: Genetic Evidence for Constitutive Activation of the RET/PTC-RAS-BRAF Signaling Pathway in Papillary Thyroid Carcinoma | 2003 | 1132 | 66.59 |
| 6    | Ron E, et al. (31) | Radiation Research | Thyroid-Cancer After Exposure to External Radiation-A Pooled Analysis of 7 Studies | 1995 | 911 | 36.44 |
| 7    | Davies L, et al. (17) | JAMA-Tolaryngology-Head & Neck Surgery | Current Thyroid Cancer Trends in the United States | 2014 | 783 | 130.50 |
| 8    | Wells SA, et al. (19) | Journal of Clinical Oncology | Vandetanib in Patients with Locally Advanced or Metastatic Medullary Thyroid Cancer: A Randomized, Double-Blind Phase III Trial | 2012 | 708 | 88.50 |
| 9    | Schlumberger M, et al. (20) | New England Journal of Medicine | Lenvatinib versus Placebo in Radioiodine-Refractory Thyroid Cancer | 2015 | 676 | 135.20 |
| 10   | Xing MZ, et al. (32) | Journal of Clinical Endocrinology & Metabolism | BRAF Mutation Predicts a Poorer Clinical Prognosis for Papillary Thyroid Cancer | 2005 | 660 | 44.00 |
| 11   | Chen AY, et al. (33) | Cancer | Increasing Incidence of Differentiated Thyroid Cancer in the United States, 1988-2005 | 2009 | 656 | 59.64 |
| 12   | Brose MS, et al. (21) | Lancet | Sorafenib in Radioactive Iodine-Refractory, Locally Advanced or Metastatic Differentiated Thyroid Cancer: A Randomized, Double-Blind, Phase 3 Trial | 2014 | 642 | 107.00 |
| 13   | Lim H, et al. (34) | JAMA-Journal of the American Medical Association | Trends in Thyroid Cancer Incidence and Mortality in the United States, 1974-2013 | 2017 | 549 | 183.00 |
| Rank | First author | Journal | Title | Published year | Citation | ACY* |
|------|--------------|---------|-------|----------------|----------|------|
| 14   | Enewold L, et al. | *Cancer Epidemiology Biomarkers & Prevention* | Rising Thyroid Cancer Incidence in the United States by Demographic and Tumor Characteristics, 1980-2005 | 2009 | 531 | 48.27 |
| 15   | Elashoff M, et al. | *Gastroenterology* | Pancreatitis, Pancreatic, and Thyroid Cancer With Glucagon-Like Peptide-1-Based Therapies | 2011 | 529 | 58.78 |
| 16   | Elisei R, et al. | *Journal of Clinical Oncology* | Cabozantinib in Progressive Medullary Thyroid Cancer | 2013 | 525 | 75.00 |
| 17   | Perros P, et al. | *Clinical Endocrinology* | Guidelines for the management of thyroid cancer. | 2014 | 514 | 85.67 |
| 18   | Xing MZ, et al. | *JAMA-Journal of the American Medical Association* | Association Between BRAF V600E Mutation and Mortality in Patients with Papillary Thyroid Cancer | 2013 | 505 | 72.14 |
| 19   | Gupta-Abramson V, et al. | *Journal of Clinical Oncology* | Phase II Trial of Sorafenib in Advanced Thyroid Cancer | 2008 | 499 | 41.58 |
| 20   | Tuttle RM, et al. | *Thyroid* | Estimating Risk of Recurrence in Differentiated Thyroid Cancer After Total Thyroidectomy and Radioactive Iodine Remnant Ablation: Using Response to Therapy Variables to Modify the Initial Risk Estimates Predicted by the New American Thyroid Association Staging System | 2010 | 479 | 47.90 |
| 21   | Cohen EEW, et al. | *Journal of Clinical Oncology* | Axitinib is an active treatment for all histologic subtypes of advanced thyroid cancer: Results from a phase II study | 2008 | 463 | 38.58 |
| 22   | Schwepp RE, et al. | *Journal of Clinical Endocrinology & Metabolism* | Deoxyribonucleic Acid Profiling Analysis of 40 Human Thyroid Cancer Cell Lines Reveals Cross-Contamination Resulting in Cell Line Redundancy and Misidentification | 2008 | 425 | 35.42 |
| 23   | Kilfoy BA, et al. | *Cancer Causes & Control* | International patterns and trends in thyroid cancer incidence, 1973–2002 | 2009 | 416 | 37.82 |
| 24   | La Vecchia C, et al. | *International Journal of Cancer* | Thyroid cancer mortality and incidence: A global overview | 2015 | 410 | 82.00 |
| 25   | Kloos RT, et al. | *Journal of Clinical Oncology* | Phase II Trial of Sorafenib in Metastatic Thyroid Cancer | 2009 | 408 | 37.09 |
| 26   | Ho AL, et al. | *New England Journal of Medicine* | Selumetinib-Enhanced Radioiodine Uptake in Advanced Thyroid Cancer | 2013 | 383 | 54.71 |
| 27   | Bilimoria KY, et al. | *Annals of Surgery* | Extent of Surgery Affects Survival for Papillary Thyroid Cancer | 2007 | 380 | 29.23 |
| 28   | Schlumberger M, et al. | *New England Journal of Medicine* | Strategies of Radioiodine Ablation in Patients with Low-Risk Thyroid Cancer | 2012 | 366 | 45.75 |
| 29   | Smallridge RC, et al. | *Thyroid* | American Thyroid Association Guidelines for Management of Patients with Anaplastic Thyroid Cancer | 2012 | 363 | 45.38 |
| 30   | Rubino C, et al. | *British Journal of Cancer* | Second Primary Malignancies in Thyroid Cancer Patients | 2003 | 358 | 21.06 |
| 31   | Scheumann GFW, et al. | *World Journal of Surgery* | Prognostic-Significance and Surgical-Management of Locoregional Lymph-Node Metastases in Papillary Thyroid-Cancer | 1994 | 357 | 13.73 |
| Rank | First author                     | Journal                                | Title                                                                 | Published year | Citation | ACY* |
|------|----------------------------------|----------------------------------------|----------------------------------------------------------------------|----------------|----------|------|
| 32   | Francis GL, et al.(48)           | Thyroid                                | Management Guidelines for Children with Thyroid Nodules and Differentiated Thyroid Cancer | 2015           | 356      | 71.20|
| 33   | Sherman SI, et al.(49)           | New England Journal of Medicine        | Motesanib Diphosphate in Progressive Differentiated Thyroid Cancer    | 2008           | 356      | 29.67|
| 34   | Cardis E, et al. (50)            | JNCI-Journal of the National Cancer Institute | Risk of Thyroid Cancer After Exposure to I-131 in Childhood         | 2005           | 351      | 23.40|
| 35   | Kurzrock R, et al.(51)           | Journal of Clinical Oncology           | Activity of XL184 (Cabozantinib), an Oral Tyrosine Kinase Inhibitor, in Patients with Medullary Thyroid Cancer | 2011           | 349      | 38.78|
| 36   | Singer PA, et al.(52)            | Archives of Internal Medicine          | Treatment Guidelines for Patients with Thyroid Nodules and Well-Differentiated Thyroid Cancer | 1996           | 345      | 14.38|
| 37   | Machens A, et al.(53)            | New England Journal of Medicine        | Early Malignant Progression of Hereditary Medullary Thyroid Cancer    | 2003           | 341      | 20.06|
| 38   | Xing MZ, et al.(54)              | Journal of Clinical Oncology           | BRAF V600E and TERT Promoter Mutations Cooperatively Identify the Most Aggressive Papillary Thyroid Cancer with Highest Recurrence | 2014           | 334      | 55.67|
| 39   | Wells SA, et al.(19)             | Journal of Clinical Oncology           | Vandetanib for the Treatment of Patients with Locally Advanced or Metastatic Hereditary Medullary Thyroid Cancer | 2010           | 332      | 33.20|
| 40   | Maxon HR, et al.(55)             | New England Journal of Medicine        | Relation Between Effective Radiation-Dose and Outcome of Radioidine Therapy for Thyroid-Cancer | 1983           | 330      | 8.92 |
| 41   | Mallick U, et al.(56)            | New England Journal of Medicine        | Ablation with Low-Dose Radioidine and Thyrotropin Alfa in Thyroid Cancer | 2012           | 322      | 40.25|
| 42   | Sipos JA, et al.(57)             | Clinical Oncology                      | Thyroid Cancer Epidemiology and Prognostic Variables                 | 2010           | 318      | 31.80|
| 43   | Feine U, et al.(58)              | Journal of Nuclear Medicine            | Fluorine-18-FDG and Iodine-131-Iodide Uptake in Thyroid Cancer        | 1996           | 317      | 13.21|
| 44   | Machens A, et al.(59)            | World Journal of Surgery               | Pattern of Nodal Metastasis for Primary and Reoperative Thyroid Cancer | 2002           | 316      | 17.56|
| 45   | Xing MZ, et al.(60)              | Lancet                                | Progress in Molecular-Based Management of Differentiated Thyroid Cancer | 2013           | 307      | 43.86|
| 46   | Kouvaraki MA, et al.(61)         | Surgery                               | Role of Preoperative Ultrasonography in the Surgical Management of Patients with Thyroid Cancer | 2003           | 307      | 18.06|
| 47   | Leenhardt L, et al.(62)          | Thyroid                               | Increased Incidence of Thyroid Carcinoma in France: A True Epidemic or Thyroid Nodule Management Effects? Report from the French Thyroid Cancer Committee | 2004           | 305      | 19.06|
| 48   | Kebebew E, et al.(63)            | Annals of Surgery                     | The Prevalence and Prognostic Value of BRAF Mutation in Thyroid Cancer | 2007           | 304      | 23.38|
| 49   | Ron E, et al.(64)                | JNCI-Journal of the National Cancer Institute | A Population-Based Case Control Study of Thyroid-Cancer             | 1987           | 298      | 9.03 |
| Rank | First author                | Journal                                         | Title                                                                 | Published year | Citation | ACY*  |
|------|-----------------------------|------------------------------------------------|----------------------------------------------------------------------|----------------|----------|-------|
| 50   | Ciampi R, et al.(65)         | Journal of Clinical Investigation               | Oncogenic AKAP9-BRAF Fusion is a Novel Mechanism of MAPK Pathway Activation in Thyroid Cancer | 2005           | 297      | 19.80 |
| 51   | Simpson WJ, et al.(66)       | American Journal of Medicine                   | Papillary and Follicular Thyroid-Cancer-Prognostic Factors In 1,578 Patients | 1987           | 294      | 8.91  |
| 52   | Elisei R, et al.(33)         | Journal of Clinical Endocrinology & Metabolism  | Prognostic Significance of Somatic RET Oncogene Mutations in Sporadic Medullary Thyroid Cancer: A 10-Year Follow-Up Study | 2008           | 289      | 24.08 |
| 53   | Clark OH, (67)               | Annals of Surgery                              | Total Thyroidectomy-The Treatment of Choice for Patients with Differentiated Thyroid-Cancer | 1982           | 281      | 7.39  |
| 54   | Elisei R, et al.(32)         | Journal of Clinical Endocrinology & Metabolism  | Impact of Routine Measurement of Serum Calcitonin on the Diagnosis and Outcome of Medullary Thyroid Cancer: Experience in 10,864 Patients with Nodular Thyroid Disorders | 2004           | 278      | 17.38 |
| 55   | Hou P, et al.(68)            | Clinical Cancer Research                       | Genetic Alterations and their Relationship in the Phosphatidylinositol 3-Kinase/Akt Pathway in Thyroid Cancer | 2007           | 277      | 21.31 |
| 56   | Carr LL, et al.(69)          | Clinical Cancer Research                       | Phase II Study of Daily Sunitinib in FDG-PET-Positive, Iodine-Refractory Differentiated Thyroid Cancer and Metastatic Medullary Carcinoma of the Thyroid with Functional Imaging Correlation | 2010           | 274      | 27.40 |
| 57   | Mellilo RM, et al.(70)        | Journal of Clinical Investigation              | The RET/PTC-RAS-BRAF Linear Signaling Cascade Mediates the Motile and Mitogenic Phenotype of Thyroid Cancer Cells | 2005           | 273      | 18.20 |
| 58   | Xing MZ, et al.(71)          | Journal of Clinical Oncology                   | Association Between BRAF V600E Mutation and Recurrence of Papillary Thyroid Cancer | 2015           | 271      | 54.20 |
| 59   | Nikiforova MN, et al.(72)    | Journal of Clinical Endocrinology & Metabolism  | Targeted Next-Generation Sequencing Panel (ThyroSeq) for Detection of Mutations in Thyroid Cancer | 2013           | 270      | 38.57 |
| 60   | Pineda JD, et al.(73)        | Journal of Clinical Endocrinology & Metabolism  | I-131 Therapy For Thyroid-Cancer Patients with Elevated Thyroglobulin and Negative Diagnostic Scan | 1995           | 270      | 10.80 |
| 61   | Chen H, et al.(74)           | Pancreas                                        | The North American Neuroendocrine Tumor Society Consensus Guideline for the Diagnosis and Management of Neuroendocrine Tumors Pheochromocytoma, Paraganglioma, and Medullary Thyroid Cancer | 2010           | 265      | 26.50 |
| 62   | Gudmundsson J, et al.(75)    | Nature Genetics                                | Common Variants on 9q22.33 and 14q13.3 Predispose to Thyroid Cancer in European Populations | 2009           | 265      | 24.09 |
| 63   | Lam ET, et al.(26)           | Journal of Clinical Oncology                   | Phase II Clinical Trial of Sorafenib in Metastatic Medullary Thyroid Cancer | 2010           | 264      | 26.40 |
| 64   | Maxon HR, et al.(76)         | Journal of Nuclear Medicine                    | Radiodine-131 Therapy for Well-Differentiated Thyroid-Cancer-A Quantitative Radiation Dosimetric Approach-Outcome and Validation in 85 Patients | 1992           | 261      | 9.32  |
| Rank | First author | Journal | Title | Published year | Citation | ACY* |
|------|--------------|---------|-------|---------------|----------|------|
| 55   | Leboulleux S, et al.(77) | Journal of Clinical Endocrinology & Metabolism | Ultrasound Criteria of Malignancy for Cervical Lymph Nodes in Patients Followed Up for Differentiated Thyroid Cancer | 2007 | 260 | 20.00 |
| 66   | Haymart MR, et al.(78) | Journal of Clinical Endocrinology & Metabolism | Higher Serum Thyroid-Stimulating Hormone Level in Thyroid Nodule Patients is Associated with Greater Risks of Differentiated Thyroid Cancer and Advanced Tumor Stage | 2008 | 259 | 21.58 |
| 67   | Morris LGT, et al.(79) | Thyroid | The Increasing Incidence of Thyroid Cancer: The Influence of Access to Care | 2013 | 256 | 36.57 |
| 68   | Garcia-Rostan G, et al.(80) | Journal of Clinical Oncology | Ras Mutations are Associated with Aggressive Tumor Phenotypes and Poor Prognosis in Thyroid Cancer | 2003 | 256 | 15.06 |
| 69   | Schlumberger MJ, et al.(81) | Journal of Clinical Oncology | Phase II Study of Safety and Efficacy of Motesanib in Patients with Progressive or Symptomatic, Advanced or Metastatic Medullary Thyroid Cancer | 2009 | 254 | 23.09 |
| 70   | White ML, et al.(82) | World Journal of Surgery | Central Lymph Node Dissection in Differentiated Thyroid Cancer | 2007 | 253 | 19.46 |
| 71   | Sigurdson AJ, et al.(83) | Lancet | Primary Thyroid Cancer After a First Tumor in Childhood (the Childhood Cancer Survivor Study): A Nested Case-Control Study | 2005 | 248 | 16.53 |
| 72   | Kim DW, et al.(84) | Journal of Clinical Endocrinology & Metabolism | An Orally Administered Multitarget Tyrosine Kinase Inhibitor, SU11248, is a Novel Potent Inhibitor of Thyroid Oncogenic RET/Papillary Thyroid Cancer Kinases | 2006 | 246 | 17.57 |
| 73   | Tucker MA, et al.(85) | Cancer Research | Therapeutic Radiation at a Young Age is Linked to Secondary Thyroid Cancer | 1991 | 246 | 8.48 |
| 74   | Aschebrook-Kilfoy B, et al.(86) | Thyroid | Thyroid Cancer Incidence Patterns in the United States by Histologic Type, 1992-2006 | 2005 | 244 | 16.27 |
| 75   | Podnos YD, et al.(87) | American Surgeon | The Implication of Lymph Node Metastasis on Survival in Patients with Well-Differentiated Thyroid Cancer | 2005 | 244 | 16.27 |
| 76   | Wang WP, et al.(88) | Journal of Clinical Endocrinology & Metabolism | [F-18]-2-Fluoro-2-Deoxy-D-Glucose Positron Emission Tomography Localizes Residual Thyroid Cancer in Patients with Negative Diagnostic I-131 Whole-Body Scans and Elevated Serum Thyroglobulin Levels | 1999 | 242 | 11.52 |
| 77   | Jazdzewski K, et al.(89) | Proceedings of the National Academy of Sciences of the United States of America | Polymorphic Mature microRNAs from Passenger Strand of pre-miR-146a Contribute to Thyroid Cancer | 2009 | 240 | 21.82 |
| 78   | Stulak JM, et al.(90) | Archives of Surgery | Value of Preoperative Ultrasonography in the Surgical Management of Initial and Reoperative Papillary Thyroid Cancer | 2006 | 238 | 17.00 |
| Rank | First author | Journal | Title | Published year | Citation | ACY* |
|------|--------------|---------|-------|----------------|----------|------|
| 79   | Garcia-Rostan, et al.(91) | Cancer Research | Mutation of the PIK3CA Gene in Anaplastic Thyroid Cancer | 2005 | 238 | 15.87 |
| 80   | Sywak, et al.(92) | Surgery | Routine Ipsilateral Level VI Lymphadenectomy Reduces Postoperative Thyroglobulin Levels in Papillary Thyroid Cancer | 2006 | 237 | 16.93 |
| 81   | Cailleux, et al.(93) | Journal of Clinical Endocrinology & Metabolism | Is Diagnostic Iodine-131 Scanning Useful After Total Thyroid Ablation for Differentiated Thyroid Cancer? | 2000 | 236 | 11.80 |
| 82   | Landa, et al.(94) | Journal of Clinical Endocrinology & Metabolism | Frequent Somatic TERT Promoter Mutations in Thyroid Cancer: Higher Prevalence in Advanced Forms of the Disease | 2013 | 235 | 33.57 |
| 83   | Kang, et al.(34) | Surgical Endoscopy and Other Interventional Techniques | Robot-Assisted Endoscopic Surgery for Thyroid Cancer: Experience with the First 100 Patients | 2009 | 229 | 20.82 |
| 84   | Vivacqua, et al.(95) | Molecular Pharmacology | 17 Beta-Estradiol, Genistein, and 4-Hydroxytamoxifen Induce the Proliferation of Thyroid Cancer Cells Through the G Protein-Coupled Receptor GPR30 | 2006 | 226 | 16.14 |
| 85   | Scollo, et al.(31) | Journal of Clinical Endocrinology & Metabolism | Rationale for Central and Bilateral Lymph Node Dissection in Sporadic and Hereditary Medullary Thyroid Cancer | 2003 | 225 | 13.24 |
| 86   | Hanscheid, et al.(96) | Journal of Nuclear Medicine | Iodine Biokinetics and Dosimetry in Radioiodine Therapy of Thyroid Cancer: Procedures and Results of a Prospective International Controlled Study of Ablation After rhTSH or Hormone Withdrawal | 2006 | 224 | 16.00 |
| 87   | Ryder, et al.(97) | Endocrine-Related Cancer | Increased Density of Tumor-Associated Macrophages is Associated with Decreased Survival in Advanced Thyroid Cancer | 2008 | 222 | 18.50 |
| 88   | Grunwald, et al.(98) | European Journal of Nuclear Medicine | Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography in Thyroid Cancer: Results of a Multicentre Study | 1999 | 222 | 10.57 |
| 89   | Wang, et al.(99) | Journal of Clinical Endocrinology & Metabolism | Prognostic Value of [F-18]Fluorodeoxyglucose Positron Emission Tomographic Scanning in Patients with Thyroid Cancer | 2000 | 219 | 10.95 |
| 90   | Leboulleux, et al.(21) | Lancet Oncology | Vandetanib in Locally Advanced or Metastatic Differentiated Thyroid Cancer: A Randomized, Double-Blind, Phase 2 Trial | 2012 | 216 | 27.00 |
| 91   | Brown, et al.(100) | Journal of Clinical Endocrinology & Metabolism | The Risk of Second Primary Malignancies up to three Decades After the Treatment of Differentiated Thyroid Cancer | 2008 | 216 | 18.00 |
| 92   | Jung, et al.(101) | Journal of Clinical Endocrinology & Metabolism | The Increase in Thyroid Cancer Incidence During the Last Four Decades is Accompanied by a High Frequency of BRAF Mutations and a Sharp Increase in RAS Mutations | 2014 | 210 | 35.00 |

Continued →
One of the earlier studies reported that nearly half of all scientific publications received no citations, where the number of articles having more than 100 citations was less than 2% (5). Even the most scientifically interesting articles needed time to obtain citations from subsequent publications. The bibliometric analysis can help researchers easily access and analyze a variety of topics, providing a historical perspective on medical-related scientific progress.

Table 1. The top 100 cited papers in thyroid cancer.

| Rank | First author | Journal | Title | Published year | Citation | ACY* |
|------|--------------|---------|-------|----------------|----------|------|
| 93   | Sgouros G, et al. (102) | Journal of Nuclear Medicine | Patient-Specific Dosimetry for 1-131 Thyroid Cancer Therapy Using 1-124 PET and 3-Dimensional-Internal Dosimetry (3D-ID) Software | 2004 | 204 | 12.75 |
| 94   | Griffith OL, et al. (103) | Journal of Clinical Oncology | Meta-Analysis and Meta-Review of Thyroid Cancer Gene Expression Profiling Studies Identifies Important Diagnostic Biomarkers | 2006 | 203 | 14.50 |
| 95   | Frattini M, et al. (104) | Oncogene | Alternative Mutations of BRAF, RET, and NTRK1 are Associated with Similar But Distinct Gene Expression Patterns in Papillary Thyroid Cancer | 2004 | 200 | 12.50 |
| 96   | Belfiore A, et al. (105) | Journal of Clinical Endocrinology & Metabolism | Increased Aggressiveness of Thyroid-Cancer in Patients with Graves-Disease | 1990 | 200 | 6.67 |
| 97   | Jarzab B, et al. (106) | Cancer Research | Gene Expression Profile of Papillary Thyroid Cancer: Sources of Variability and Diagnostic Implications | 2005 | 199 | 13.27 |
| 98   | Dow KH, et al. (107) | Thyroid | Quality-of-Life Changes in Patients with Thyroid Cancer After Withdrawal of Thyroid Hormone Therapy | 1997 | 199 | 8.65 |
| 99   | Simpson WJ, et al. (108) | International Journal of Radiation Oncology Biology Physics | Papillary and Follicular Thyroid Cancer: Impact of Treatment in 1,578 Patients | 1988 | 198 | 6.19 |
| 100  | Kim TH, et al. (8) | Cancer | The Association of the BRAF(V600E) Mutation with Prognostic Factors and Poor Clinical Outcome in Papillary Thyroid Cancer | 2012 | 197 | 24.63 |
A bibliometric study includes information about the trends in research over time. The number of times other research articles cite a publication is often used to measure the impact of the journal along with validating authors’ contributions (9,10). This study aimed to identify the first 100 most cited articles on thyroid cancer, making it easier for researchers to locate and read these papers. Although bibliometric studies have been conducted on many other subjects before, ours is the first of its kind study for thyroid cancer (4-6,9,10).

The time of publishing can significantly impact an article’s citation ranking. Logically, the citations of an article depend on publication time because citations tend to accumulate over time. Although the number of citations shows an increase as time passes, some valuable articles may receive a high number of citations in the year they are published. An example of this is the article published in 2016, which ranked first in our study with 4,325 citations (7). As time goes by, articles published a long time ago may get fewer citations as their findings become assimilated and do not need further references. Additionally, the absence of articles before 1982 in our list of the most cited articles may indicate the futility of outdated articles in modern times. Although it is difficult to examine the top 100 articles with the most citations, we found the publication duration for the first 100 articles to be between 1982 and 2017. Most articles within the top 100 list were between 2008 and 2009, with another peak observed in 2013. The reason for this may be the involvement of phase III studies of specific agents in advanced stage cancers, which were published in the aforementioned years. In the bibliometric analysis study on colon cancer (3), 2004 was found to be the peak year for the number of publications, while the highest publication years for breast cancer were 2001 and 2010 (4).

Of the top 100 articles, 70 were from the United States of America (USA). Moreover, the publications from the USA preferred to cite other articles also from the USA (11,12). The country’s publications were also high in other clinical disciplines, such as cardiology (13), intensive care (14), respiratory (15), and urology (16). These findings show that the USA is at the forefront of thyroid cancer studies. A wide range of patient populations with significant financial support to the researchers could be the main reason behind this.
The authors for the most cited article were Haugen et al. (7), and their publication was reviewed by the guidelines for the American Thyroid Association (ATA). It is not surprising that this article, examined by the ATA guideline, was the most frequently used article by the surgeons interested in thyroid surgery. This study has developed evidence-based recommendations to make clinically-informed decisions in managing thyroid

Table 2. Journals that published the top 100 cited thyroid cancer papers.

| Source Titles                                           | 5 year impact factor* | Records | Total Citations |
|--------------------------------------------------------|-----------------------|---------|-----------------|
| Journal of Clinical Endocrinology Metabolism            | 5.879                 | 17      | 4,740           |
| Journal of Clinical Oncology                            | 25.597                | 13      | 4,866           |
| Thyroid                                                | 6.332                 | 8       | 6,531           |
| New England Journal of Medicine                        | 72.098                | 7       | 2,774           |
| Cancer Research                                        | 9.883                 | 4       | 1,816           |
| Journal of Nuclear Medicine                            | 6.782                 | 4       | 1,006           |
| Annals of Surgery                                      | 9.306                 | 3       | 965             |
| Journal of the American Medical Association             | 47.677                | 3       | 3,272           |
| Lancet                                                 | 59.345                | 3       | 1,197           |
| World Journal of Surgery                               | 2.754                 | 3       | 926             |
| American Journal of Medicine                           | 5.262                 | 2       | 2,089           |
| Cancer                                                  | 5.517                 | 2       | 853             |
| Clinical Cancer Research                               | 10.115                | 2       | 551             |
| Journal of the National Cancer Institute               | 11.641                | 2       | 649             |
| Journal of Clinical Investigation                      | 13.393                | 2       | 570             |
| Nature Genetics                                         | 30.334                | 2       | 1,754           |
| Surgery                                                | 3.717                 | 2       | 544             |
| American Surgeon                                       | 0.692                 | 1       | 244             |
| Archives of Internal Medicine                          | 13.098                | 1       | 345             |
| Archives of Surgery                                    | 4.893                 | 1       | 238             |
| British Journal of Cancer                              | 6.210                 | 1       | 358             |
| Cancer Causes Control                                  | 2.621                 | 1       | 416             |
| Cancer Epidemiology Biomarkers Prevention              | 4.898                 | 1       | 531             |
| Clinical Endocrinology                                 | 3.366                 | 1       | 514             |
| Clinical Oncology                                      | 3.213                 | 1       | 318             |
| Endocrine Related Cancer                               | 5.129                 | 1       | 222             |
| European Journal of Nuclear Medicine                   | n/a                   | 1       | 222             |
| Gastroenterology                                       | 18.785                | 1       | 529             |
| International Journal of Cancer                       | 6.485                 | 1       | 410             |
| International Journal of Radiation Oncology Biology Physics | 5.652             | 1       | 198             |
| JAMA Otolaryngology Head Neck Surgery                  | 4.097                 | 1       | 783             |
| Lancet Oncology                                        | 35.843                | 1       | 216             |
| Molecular Pharmacology                                 | 3.904                 | 1       | 226             |
| Oncogene                                               | 7.066                 | 1       | 200             |
| Pancreas                                               | 2.820                 | 1       | 265             |
| Proceedings of the National Academy of Sciences of the United States of America | 10.620                | 1       | 240             |
| Radiation Research                                    | 2.802                 | 1       | 911             |
| Surgical Endoscopy and Other Interventional Techniques | 3.239                 | 1       | 229             |

*2019 Journal Citation Reports (Clarivate Analytics).
nodules and differentiated thyroid cancer. Further, seven different guideline studies were also present in the top 100. The second most cited article investigated the incidence, histology, size distribution, and mortality caused by thyroid cancer (17), along with highlighting the advances in the diagnosis of subclinical disease. The third most cited article was by Mazzaferri et al., published in 1994, which has considerably progressed thyroid cancer treatment in the years to follow (18).

The connection between the thyroid gland and genetics is one of the topics discussed in many studies, and over 22 manuscripts in the top 100 list included research on genetic mutations. Our result is not surprising since there is a well-established link between genetics and thyroid cancer. Research articles, including four drugs for advanced and iodine-131 resistant thyroid cancers, were shown to act as promising treatments between 2012 and 2015.

Of the top 100 cited studies, 17 were drug trials with three papers on Vandetanib. The first study was published in 2010 (19) and had concluded that vandetanib might be an effective therapeutic option in patients with locally advanced or hereditary medullary thyroid cancer (MTC). Vandetanib, the first targeted drug, showed efficacy in a randomized phase II trial in the year 2012, along with efficacy in a phase III study of patients with advanced MTC (20,21).

Lenvatinib was associated with significant improvements in progression-free survival and response rates in patients with iodine-131-resistant thyroid cancer compared to placebo (22). Similarly, Sorafenib significantly improved progression-free survival in patients with progressive and radioactive iodine-refractory differentiated thyroid cancer compared to placebo (23). A phase II study of Sorafenib was published in 2008 and was identified among our list of the first 100 articles (24). Apart from that, two other papers also discussed the efficacy of sorafenib in thyroid cancer (25,26).

Cabozantinib showed a statistically significant improvement of progression-free survival in patients with progressive metastatic MTC (27,28). In the same year, a phase II study on axitinib was published due to its effectiveness in treating all thyroid cancer stages (29). Also, we observed that the Selumetinib article published in 2013 was in the top 100 list (30), and a significant breakthrough for advanced-stage thyroid cancer treatment was made in the same year.

Of the top 100 articles, 12 articles are on MTC, indicating the importance of this cancer type. A 2003 article discussed the lymph
node dissection patterns of hereditary and sporadic medullary cancer along with the early malignant progression of hereditary MTC (31). Further, an article on the importance of using calcitonin in the follow-up in MTC patients was published in 2004 (32). Later, the prognostic significance of somatic RET oncogene mutations in sporadic MTC was investigated as well (33). Among the top 100 articles, the studies of Elisei et al. were mainly about MTC, while three of the 12 MTC-related articles belonged to another research group (27,32,33).

Investigating the incidence of the disease has always been a popular topic. In our study, 12 papers included incidence studies. We also encountered three studies investigating the effects of external radiation on thyroid cancer. Among the top 100 cited studies, ten papers were based on I-131 treatment. A study on robotic surgery, a popular topic of recent times, was also included in the top 100 list (34), and we believe that this may increase in the future.

The most cited co-authors standing out in their fields were Fagin JA and Schlumberger M, who wrote 20 articles in the top 100 list. The most interesting finding of our study was that not all articles published in journals with high impact factors received high citation scores. However, previous studies had concluded that high citation articles were found in journals with high impact factors (4). Our study showed that even journals with a 5-year impact factor of 0.692 could enter the top 100 list with just one article, and although the New England Journal of Medicine had the highest impact factor, it was not the most-cited. Also, the Thyroid journal, even at the top of the list with eight articles, had more than half of the citations taken only from a single article (7).

In this bibliometric analysis, the vast majority of the top 100 articles were from the field of oncology, followed by endocrine sciences and the general internal medicine research, while pharmacology was at the bottom of the list. General surgeons also contributed significantly to the field of thyroid cancer. However, there are some limitations to our research. Firstly, deliberate omissions of many citations were done for reasons such as disproportionate or inappropriate citations, institutional and language bias, self-attribution, and strong personal bias. Secondly, there were differences in the broadcast times since older articles had the opportunity to get more citations. For this reason, valuable studies published recently may show up with high citations in similar bibliometric studies conducted in the future. Also, many writers in the top 100 may have contributed to multiple articles, although they were not the first or senior authors.

To our knowledge, this article is the first bibliometric study in the field of thyroid cancer. In this study, we identified that the most cited article provided a guideline analysis while the most popular subjects were genetics and medullary cancer. We believe that this study can shed light on the authors working in this field and provide easy access to all medical researchers and staff, thus, contributing to the thyroid cancer field.

**Acknowledgment**
Thanks to AME Editor from American Manuscript Editors for editing the manuscript.

**Source of Finance**
During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

**Conflict of Interest**
No conflicts of interest between the authors and/or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

**Authorship Contributions**
Idea/Concept: Veysel Barış Turhan; Design: Veysel Barış Turhan; Control/Supervision: Veysel Barış Turhan; Data Collection and/or Processing: Abdul Kadir Ünsal; Analysis and/or Interpretation: Abdul Kadir Ünsal; Literature Review: Veysel Barış Turhan; Writing the Article: Veysel Barış Turhan; Critical Review: Veysel Barış Turhan; References and Fundings: Abdul Kadir Ünsal; Materials: Veysel Barış Turhan.
References

1. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Dicker D, Pain A, Hamavid H, Moradi-Lakeh M, MacIntyre MF, Allen C, Hansen G, Woodbrook R, Wolfe C, Hamadéh RR, Moore A, Werdecker A, Gessner BD, Te Ao B, McMahon B, Karimkhani C, Yu C, Cooke GS, Schwabed DC, Carpenter DO, Pereira DM, Nash D, Kazi DS, De Leo D, Plass D, Ukwaja KN, Thurston GD, Yun Jin K, Simard EP, Mills E, Park EK, Catalá-López F, deVeber G, Gotay C, Khan G, Hossog Good HD 3rd, Santos IS, Leasher JL, Singh J, Leigh J, Jonas JB, Sanabria J, Beardsley J, Jacobsen KH, Takahashi K, Franklin RC, Ronfani L, Montico M, Naldi L, Tonelli M, Geleijnse J, Petzold M, Shirmoh MG, Younis M, Yemenoto N, Breitborde N, Yip P, Pourmalek F, Lotufo PA, Esteghamati A, Hankey GJ, Ali R, Lunevicius R, Malekzadeh R, Dellavalle R, Weintrab R, Lucas R, Hay R, Rios-Rueda D, Westerman R, Sepanlon SG, Nolte S, Patton S, Weichenthal S, Abera SF, Fereshtehnejad SM, Shiu J, Driscoll T, Vasanikari T, Alsharif U, Rahimi Movaghar V, Vlassov VV, Marques WS, Meckenes W, Melaku YA, Yano Y, Artaman A, Campos J, MacLachlan J, Mueller U, Kim D, Trillini M, Eshrat B, Williams HC, Shibuya K, Dandona R, Murthy K, Cowie B, Amare AT, Antonio CA, Casta-edo-Orjuela C, van Goor CH, Vielante F, Oh IH, Deribe K, Soreide K, Knibbs L, Kereselidze M, Green M, Cardenas R, Roy N, Tillmann T, Li Y, Krueger H, Monasta L, Dey S, Sheikhi-bahaei CT, Dandona L, Wang H, Vollset SE, Mokdad A, Salomon JA, Lozano R, Vos T, Forouzanforo T, Li Y, Krueger H, Monasta L, Dey S, Sheikhi-bahaei CT, Dandona L, Wang H, Vollset SE, Mokdad A, Salomon JA, Lozano R, Vos T, Forouzanfar M, Lopez A, Murray C, Naghavi M. The Global Burden of Cancer 2013. JAMA Oncol. 2015; 1:505-527. Erratum in: JAMA Oncol. 2015;1: 690. Jonas, Jost [corrected to Jonas, Jost B]; Tillman, Taavi [corrected to Tillmann, Taavi]. [Crossref] [PubMed] [PMC]

2. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. BMJ. 1996;312:71-72. [Crossref] [PubMed] [PMC]

3. Wrafter PF, Connelly TM, Khan J, Devane L, Kelly J, Joyce WP. The 100 most influential manuscripts in colorectal cancer: A bibliometric analysis. Surgeon. 2016;14:327-336. [Crossref] [PubMed]

4. Uysal E. Top 100 cited articles in breast cancer research. Eur J Breast Health. 2017;13:129-137. [Crossref] [PubMed] [PMC]

5. Manuel Vázquez A, Latorre Fragua R, López Marcano A, Ramiro Pérez C, Arteaga Peralta V, de la Plaza-Llamas R, Ramia JM. The top 100: A review of the most cited articles in Surgery. Cir Esp (Engl Ed). 2015;2010;75:1261-1268. [Crossref] [PubMed]

6. Ahmad SS, Ahmad SS, Kohl S, Ahmad S, Ahmed AR. The hundred most cited articles in bariatric surgery. Obes Surg. 2015;25:900-909. [Crossref] [PubMed]

7. Haugen BR, Alexander BK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE, Pacini F, Randolph GW, Sawka AM, Schlumberger M, Schuff KG, Sherman SI, Sosa JA, Steward DL, Tuttle RM, Wartofsky L. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. Thyroid. 2016; 26:1-133. [Crossref] [PubMed] [PMC]

8. Kim TH, Park JY, Lim JA, Ahn HY, Lee EK, Lee YJ, Kim KW, Hahn SK, Youn YK, Kim KH, Cho BY, Park DJ. The association of the BRAF(V600E) mutation with prognostic factors and poor clinical outcome in papillary thyroid cancer: a meta-analysis. Cancer. 2012;118: 1764-1773. [Crossref] [PubMed]

9. Ellul T, Bullock N, Abdelrahman T, Powell AG, Winterspoon J, Lewis WG. The 100 most cited manuscripts in emergency abdominal surgery: A bibilometric analysis. Int J Surg. 2017;37:29-35. [Crossref] [PubMed]

10. O’Sullivan K, Hurley JP. The 100 most cited publications in transplantation. Ann Transplant. 2014; 19:436-443. [Crossref] [PubMed]

11. Campbell FM. National bias: a comparison of citation practices by health professionals. Bull Med Libr Ass oc. 1990;78:376-382. [Crossref] [PubMed] [PMC]

12. Link AM. US and non-US submissions: an analysis of reviewer bias. JAMA. 1998;280:246-247. [Crossref] [PubMed]

13. Shuaib W, Khan MS, Shahid H, Valdes EA, Alweis R. Bibliometric analysis of the top 100 cited cardiovascular articles. Am J Cardiol. 2015;115:972-981. [Crossref] [PubMed]

14. Baltussen A, Kindler CH. Citation classics in critical care medicine. Intensive Care Med. 2004;30:902-910. [Crossref] [PubMed]

15. Tam WW, Wong EL, Wong FC, Hui DS. Citation classics: Top 50 cited articles in 'respiratory system'. Respirology. 2013;18:71-81. [Crossref] [PubMed]

16. Heldwein FL, Rhoden EL, Morgentaler A. Classics of urology: a half century history of the most frequently cited articles (1955-2009). Urology. 2010;75:1261-1268. [Crossref] [PubMed]

17. Davies L, Welch HG. Increasing incidence of thyroid cancer in the United States, 1973-2002. JAMA. 2006;295:2164-2167. [Crossref] [PubMed]

18. Mazzaferrri EL, Jhiang SM. Long-term impact of initial surgical and medical therapy on papillary and follicular thyroid cancer. Am J Med. 1994;97:418-428. Erratum in: Am J Med 1995;98:215. [Crossref] [PubMed]

19. Wells SA Jr, Gosnell JE, Gagel RF, Moley J, Pfister D, Sosa JA, Skinner M, Krebs A, Vasselli J, Schlumberger M. Vandetanib for the treatment of patients with locally advanced or metastatic hereditary medullary thyroid cancer. J Clin Oncol. 2010;28:767-772. [Crossref] [PubMed] [PMC]

20. Wells Jr SA, Robinson BG, Gagel RF, Dralle H, Fagin JA, Santoro M, Baudin E, Elisei R, Jarzab B, Vasselli JR. Vandetanib in patients with locally advanced or metastatic medullary thyroid cancer: a randomized, double-blind phase III trial. Journal of clinical oncology. 2012;30:134. [Crossref] [PubMed] [PMC]
21. Leboulleux S, Bastholt L, Krause T, de la Fouchardiere C, Tennvall J, Awada A, Gómez JM, Bonichon F, Leenhardt L, Soufflet C. Vandetanib in locally advanced or metastatic differentiated thyroid cancer: a randomised, double-blind, phase 2 trial. The Lancet Oncology. 2012;13:897-905. [Crossref]

22. Schlumberger M, Tahara M, Wirth LJ, Robinson B, Brose MS, Elisei R, Habra MA, Newbold K, Shah MH, Hoff AO, Gianoukakis AG, Kiyota N, Taylor MH, Kim SB, Krzyzanowska MK, Dutschke CE, de las Heras B, Zhu J, Sherman SI. Lenvatinib versus placebo in radioiodine-refractory thyroid cancer. N Engl J Med. 2015;372:621-630. [Crossref] [PubMed]

23. Brose MS, Nutting CM, Jarzab B, Elisei R, Siena S, Bastholt L, de la Fouchardiere C, Pacini F, Paschke R, Shong YK, Sherman SI, Smit JW, Chung J, Kappeler C, Pe-a C, Molnár I, Schlumberger MJ; DECISION investigators. Sorafenib in radioiodine-refractory, locally advanced or metastatic differentiated thyroid cancer: a randomised, double-blind, phase 3 trial. Lancet. 2014;384:319-328. [Crossref] [PubMed] [PMC]

24. Gupta-Abramson V, Troxel AB, Nellore A, Puttaswamy K, Redlinger M, Ransone K, Mandel SJ, Fisch-K, Axer YT, O’Dwyer PJ. Phase II trial of sorafenib in metastatic thyroid cancer: 10-year follow-up study. The Journal of Clinical Endocrinology & Metabolism. 2009;89:682-687. [Crossref] [PubMed] [PMC]

25. Kloos RT, Ringel MD, Knopp MV, Hall NC, King M, Stevens R, Liang J, Wakely Jr PE, Vasko VU, Saji M. Phase II trial of sorafenib in metastatic thyroid cancer. Journal of Clinical Oncology. 2009;27:1675. [Crossref] [PubMed] [PMC]

26. Lam ET, Ringel MD, Kloos RT, Prior TW, Knopp MV, Liang J, Sammet S, Hall NC, Wakely Jr PE, Vasko VU. Phase II clinical trial of sorafenib in metastatic differentiated thyroid cancer. Journal of Clinical Oncology. 2010;28:2323. [Crossref] [PubMed] [PMC]

27. Elisei R, Schlumberger MJ, Müller SP, Schöffski P, Brose MS, Shah MH, Licitra L, Jarzab B, Medvedev V, Kreissl MC, Niederle B, Cohen EE, Wirth LJ, Ali H, Hes sel C, Yaron Y, Ball D, Nelkin B, Sherman SI. Cabozantinib in progressive medullary thyroid cancer. J Clin Oncol. 2013;31:3639-3646. Erroratum in: J Clin Oncol. 2014;32:1864. [Crossref] [PubMed] [PMC]

28. Kurzrock R, Sherman SI, Ball DW, Forastiere AA, Cohen RB, Mehra R, Pfister DG, Cohen EE, Janisch L, Nauling F, Hong DS, Ng CS, Ye L, Gagel RF, Frye J, Müller T, Ratain MJ, Salgia R. Activity of XL184 (Cabozantinib), an oral tyrosine kinase inhibitor, in patients with medullary thyroid cancer. J Clin Oncol. 2011 Jul 1;29(19):2660-6. Epub 2011 May 23. [Crossref] [PubMed] [PMC]

29. Cohen EE, Rosen LS, Vokes EE, Kies MS, Forastiere AA, Worden FP, Kane MA, Sherman E, Kim S, Bycott P. Axitinib is an active treatment for all histologic subtypes of advanced thyroid cancer: results from a phase II study. Journal of Clinical Oncology. 2008;26:4708. [Crossref] [PubMed] [PMC]

30. Ho AL, Grewal RK, Leboeuf R, Sherman EJ, Pfister DG, Deandreis D, Pentlow KS, Zançonob P, Haque S, Gavane S. Selumetinib-enhanced radioiodine uptake in advanced thyroid cancer. New England Journal of Medicine. 2013;368:623-632. [Crossref] [PubMed] [PMC]

31. Solloco C, Baudin E, Travagli J-P, Caillou B, Bellon N, Leboulleux S, Schlumberger M. Rationale for central and bilateral lymph node dissection in sporadic and hereditary medullary thyroid cancer. The Journal of Clinical Endocrinology & Metabolism. 2003;88:2070-2075. [Crossref] [PubMed] [PMC]

32. Elisei R, Bottici V, Luchetti F, Di Coscio G, Romei C, Grasso L, Miccoli P, Iaconci P, Basolo F, Pinchera A. Impact of routine measurement of serum calcitonin on the diagnosis and outcome of medullary thyroid cancer: experience in 10,864 patients with nodular thyroid disorders. The Journal of Clinical Endocrinology & Metabolism. 2004;89:163-168. [Crossref] [PubMed] [PMC]

33. Elisei R, Cosci B, Romei C, Bottici V, Renzini G, Molinaro E, Agate L, Vivaldi A, Faviana P, Basolo F. Prognostic significance of somatic RET oncogene mutations in sporadic medullary thyroid cancer: a 10-year follow-up study. The Journal of Clinical Endocrinology & Metabolism. 2008;93:682-687. [Crossref] [PubMed] [PMC]

34. Kang S-W, Jeong JJ, Yun J-S, Sung TY, Lee SC, Lee YS, Nam K-H, Chang HS, Chung WY, Park CS. Robot-assisted endoscopic surgery for thyroid cancer: experience with the first 100 patients. Surgical Endoscopy. 2009;23:2399-2406. [Crossref] [PubMed] [PMC]

35. Enewold L, Zhu K, Ron E, Marrogi AJ, Stojadinovic A, Peoples GE, Devesa SS. Rising thyroid cancer incidence in the United States by demographic and tumor characteristics, 1980-2005. Cancer Epidemiol Biomarkers Prev. 2009;18:784-791. [Crossref] [PubMed] [PMC]

36. Elashoff M, Matveyenko AV, Gier B, Elashoff R, Butcher PC. Pancreatitis, pancreatic, and thyroid cancer with glucagon-like peptide-1-based therapies. Gastroenterology. 2011;141:150-156. [Crossref] [PubMed] [PMC]

37. Perros P, Boelaert K, Colley S, Evans C, Evans RM, Gerrard Ba G, Gilbert J, Harrison B, Johnson SJ, Giles TE, Moss L, Lewington V, Newbold K, Taylor J, Thaker RV, Watsonson J, Williams GR; British Thyroid Association. Guidelines for the management of thyroid cancer. Clin Endocrinol (Oxf). 2014;81 Suppl 1:i112. [Crossref] [PubMed] [PMC]

38. Xing M, Alzahrani AS, Carson KA, Viola D, Elisei R, Bendlova B, Yip L, Mian C, Vianello F, Tuttle RM, Ro- bashetok E, Fagin JA, Puxeddu E, Fugazolla L, Cas- niecka A, Jarzab B, O’Neill CJ, Sywak MS, Lam AK, Riesco-Eizaguirre G, Santisteban P, Nakayama H, Tufano RP, Pai SI, Zeiger MA, Westra WH, Clark DP, Clifton-Bligh R, Sdransky D, Ladenson PW, Sykova V. Association between BRAF V600E mutation and mortality in patients with papillary thyroid cancer. JAMA. 2013;309:1493-1501. [Crossref] [PubMed] [PMC]
39. Tuttle RM, Tala H, Shah J, Leboeuf R, Ghossein R, Gonen M, Brokhin M, Omry G, Fagin JA, Shah A. Estimating risk of recurrence in differentiated thyroid cancer after total thyroidectomy and radioactive io-dine remnant ablation: using response to therapy va-riables to modify the initial risk estimates predicted by the new American Thyroid Association staging system. Thyroid. 2010;20:1341-1349. [Crossref] [PubMed] [PMC]

40. Schwepe RE, Klopper JP, Korch C, Pugazhenthi U, Benezra M, Knauf JA, Fagin JA, Marlow LA, Copland JA, Smallridge RC, Haugen BR. Deoxurybonucleic acid profiling analysis of 40 human thyroid cancer cell lines reveals cross-contamination resulting in cell line redundancy and misidentification. J Clin Endocrinol Metab. 2008;93:4331-4341. [Crossref] [PubMed] [PMC]

41. Kiffoy BA, Zheng T, Holford TR, Han X, Ward MH, Sjödin A, Zhang Y, Bai Y, Zhu C, Guo GL, Rothman N, Zhang Y. International patterns and trends in thyroid cancer incidence, 1973-2002. Cancer Causes Con-trol. 2009;20:525-531. [Crossref] [PubMed] [PMC]

42. La Vecchia C, Malvezzi M, Bosetti C, Garavello W, Tuttle RM, Tala H, Shah J, Leboeuf R, Ghossein R, Schlumberger M, Catargi B, Borget I, Deandreis D, Scheumann GF, Gimm O, Wegener H. Prognostic significance and surgical management of locoregional lymph node metastases in papillary thyroid cancer. World J Surg. 1994;18:559-567; discussion 567-568. [Crossref] [PubMed]

43. Scheumann GF, Gimm O, Wegener H, Hundeshagen H, Dralle H. Relationship between effective radiation dose and outcome of radioiodine therapy for thyroid cancer. N Engl J Med. 1983;309:937-941. [Crossref] [PubMed]
77. Leboulleux S, Girard E, Rose M, Travaglì JP, Sahnab N, Caillou B, Hartl DM, Lassau N, Baudin E, Schlumberger M. Ultrasonic criteria of malignancy for cervical lymph nodes in patients followed up for differentiated thyroid cancer. J Clin Endocrinol Metab. 2007; 92:3590-3594. [Crossref] [PubMed]

78. Haymart MR, Repplinger DJ, Leversen GE, Elson DF, Sippel RS, Jaume JC, Chen H. Higher serum thyroid stimulating hormone level in thyroid nodule patients is associated with greater risks of differentiated thyroid cancer and advanced tumor stage. J Clin Endocrinol Metab. 2008; 93:809-814. [Crossref] [PubMed] [PMC]

79. Morris LG, Sikora AG, Tosteson TD, Davies L. The in-creasing incidence of thyroid cancer: the influence of access to care. Thyroid. 2013; 23:885-891. [Crossref] [PubMed] [PMC]

80. Garcia-Rostan G, Zhao H, Camp RL, Pollan M, Herrero A, Pardo J, Wu R, Carcangiu ML, Costa J, Tallini, ras mutations are associated with aggressive tumor phenotypes and poor prognosis in thyroid cancer. J Clin Oncol. 2003; 21:3226-3235. [Crossref] [PubMed] [PMC]

81. Schlumberger MJ, Elisei R, Bastholt L, Wirth LJ, Mar-tins RG, Locati LD, Jarzab B, Pacini F, Daume-rie C, Droz JP, Eschenbeger MJ, Sun YN, Juan T, Ste-pan DE, Sherman SI. Phase II study of safety and efficacy of metosan in patients with progressive or symptomatic, advanced or metastatic medullary thyroid cancer. J Clin Oncol. 2009; 27:3794-3801. [Crossref] [PubMed]

82. White ML, Gauger PG, Doherty GM. Central lymph node dissection in differentiated thyroid cancer. World J Surg. 2007; 31:895-904. [Crossref] [PubMed]

83. Sigurdsson AJ, Ronckers CM, Mertens AC, Stovall M, Smith SA, Liu Y, Berkow RL, Hammond S, Neglia JP, Meadows AT, Sklar CA, Robison LL, Inskip PD. Pri-mary thyroid cancer after a first tumour in childhood (the Childhood Cancer Survivor Study): a nested case-control study. Lancet. 2005; 365:2014-2023. [Crossref] [PubMed]

84. Kim DW, Jo YS, Jung HS, Chung HK, Song JH, Park KC, Park SH, Hwang JH, Rha SY, Kweon GR, Lee SJ, Jo KW, Shong M. An orally administered multitarget tyrosine kinase inhibitor, SU11248, is a novel potent inhibitor of thyroid oncogenic RET/papillary thyroid cancer kinases. J Clin Endocrinol Metab. 2006; 91:4070-4076. [Crossref] [PubMed]

85. Tucker MA, Jones PH, Boice JD Jr, Robison LL, Stone BJ, Stovall M, Jenkin RD, Lubin JH, Baum ES, Siegel SE, et al. Therapeutic radiation at a young age is linked to secondary thyroid cancer. The Late Effects Study Group. Cancer Res. 1991; 51:2885-2888. [Crossref] [PubMed]

86. Aschebrook-Kilfoy B, Ward MH, Sabra MM, Devesa SS. Thyroid cancer incidence patterns in the United States by histologic type, 1992-2006. Thyroid. 2011; 21:125-134. [Crossref] [PubMed] [PMC]

87. Podnos YD, Smith D, Wagman LD, Ellenhorn JD. The implication of lymph node metastasis on survival in patients with well-differentiated thyroid cancer. Am Surg. 2005; 71:731-734. [Crossref] [PubMed]

88. Wang W, Macapinlac H, Larson SM, Yeh SD, Akhurst T, Finn RD, Rosai J, Robbins RJ. [18F]-2-fluoro-2-deoxy-D-glucose positron emission tomography localizes residual thyroid cancer in patients with negative diagnostic (131) I whole body scans and elevated serum thyroglobulin levels. J Clin Endocrinol Metab. 1999; 84:2291-2302. [Crossref] [PubMed]

89. Jadzewska K, Liyanarachchi S, Swierniak M, Pac-hucki J, Ringel MD, Jarzab B, de la Chapelle A. Poly-morphic mature microRNAs from passenger strand of pre-miR-146a contribute to thyroid cancer. Proc Natl Acad Sci U S A. 2009; 106:1502-1505. [Crossref] [PubMed] [PMC]

90. Stulak JM, Grant CS, Farley DR, Thompson GB, van Heerden JA, Hay JD, Reading CC, Charboneau JW. Value of preoperative ultrasonography in the surgical management of initial and reoperative papillary thyroid cancer. Arch Surg. 2006; 141:489-494; discussion 494-496. [Crossref] [PubMed]

91. García-Rostán G, Costa AM, Pereira-Castro I, Sal-vatore G, Hernandez R, Hermsem MJ, Herrero A, Fusco A, Cameselle-Teijeiro J, Santoro M. Mutation of the PIK3CA gene in anaplastic thyroid cancer. Cancer Res. 2005; 65:10199-10207. [Crossref] [PubMed]

92. Sywak M, Cornford L, Roach P, Stalberg P, Sidhu S, Delbridge L. Routine ipsilateral level VI lymphadenectomy reduces postoperative thyroglobulin levels in papillary thyroid carcinoma. Surgery. 2006; 140:1000-1005; discussion 1005-1007. [Crossref] [PubMed]

93. Cailleux AF, Baudin E, Travaglì JP, Ricard M, Schlumberger M. Is diagnostic iodine-131 scanning useful after total thyroid ablation for differentiated thyroid cancer? J Clin Endocrinol Metab. 2000; 85:175-178. [Crossref] [PubMed]

94. Landa I, Ganly I, Chan TA, Mitsutake N, Matsuse M, Ibrahimipasic T, Ghossein RA, Fagin JA. Frequent somatic TERT promoter mutations in thyroid cancer: higher prevalence in advanced forms of the disease. J Clin Endocrinol Metab. 2013; 98:E1562-1566. [Crossref] [PubMed] [PMC]

95. Vivacqua A, Bonofiglio D, Albanito L, Madeo A, Rago V, Carpino A, Musti AM, Picard D, Andi S, Maggio-lini M. 17beta-estradiol, genistein, and 4-hydroxytamoxifen induce the proliferation of thyroid cancer cells through the g protein-coupled receptor GPR30. Mol Pharmacol. 2006; 70:1414-1423. [Crossref] [PubMed]

96. Häscheid H, Lassmann M, Luster M, Thomas SR, Pacini F, Ceccarelli C, Ladenson PW, Wahl RL, Schlumberger M, Ricard M, Driedger A, Kloos RT, Sherman SI, Haugen BR, Carriere V, Corone C, Rei-ners C. Iodine biokinetics and dosimetry in radioiodine therapy of thyroid cancer: procedures and results of a prospective international controlled study of ablation after rTSH or hormone withdrawal. J Nucl Med. 2006; 47:648-654. [PubMed]
97. Ryder M, Ghossein RA, Ricarte-Filho JC, Knauf JA, Fagin JA. Increased density of tumor-associated macrophages is associated with decreased survival in advanced thyroid cancer. Endocr Relat Cancer. 2008;15:1069-1074. [Crossref] [PubMed] [PMC]

98. Grünwald F, Kälicke T, Feine U, Lietzenmayer R, Scheidhauer K, Dietlein M, Schober O, Lerch H, Brandt-Mainz K, Burchert W, Hiltermann G, Cremers U, Biersack HJ. Fluorine-18 fluorodeoxyglucose positron emission tomography in thyroid cancer: results of a multicentre study. Eur J Nucl Med. 1999;26:1547-1552. [Crossref] [PubMed] [PMC]

99. Wang W, Larson SM, Fazzari M, Tickoo SK, Kolbert KS, Sgouros G, Yeung H, Macapinlac H, Rosai J, Robbins RJ. Prognostic value of [18F]fluorodeoxyglucose positron emission tomographic scanning in patients with thyroid cancer. J Clin Endocrinol Metab. 2000;85:1107-1113. [Crossref] [PubMed]

100. Brown AP, Chen J, Hitchcock YJ, Szabo A, Shrieve DC, Tward JD. The risk of second primary malignancies up to three decades after the treatment of differentiated thyroid cancer. J Clin Endocrinol Metab. 2008;93:504-515. [Crossref] [PubMed]

101. Jung CK, Little MP, Lubin JH, Brenner AV, Wells SA Jr, Sigurdson AJ, Nikiforov YE. The increase in thyroid cancer incidence during the last four decades is accompanied by a high frequency of BRAF mutations and a sharp increase in RAS mutations. J Clin Endocrinol Metab. 2014;99:E276-85. [Crossref] [PubMed] [PMC]

102. Sgouros G, Kolbert KS, Sheikh A, Pentlow KS, Mun EF, Barth A, Robbins RJ, Larson SM. Patientspecific dosimetry for 131I thyroid cancer therapy using 124I PET and 3-dimensional-internal dosimetry (3D-ID) software. J Nucl Med. 2004;45:1366-1372. [PubMed]

103. Griffith OL, Melck A, Jones SJ, Wiseman SM. Metaanalysis and meta-review of thyroid cancer gene expression profiling studies identifies important diagnostic biomarkers. J Clin Oncol. 2006;24:5043-5051. [Crossref] [PubMed]

104. Frattini M, Ferrario C, Bressan P, Balestra D, De Cecco L, Mondellini P, Bongarzone I, Collini P, Griboldi M, Pilotti S, Pierotti MA, Greco A. Alternative mutations of BRAF, RET and NTRK1 are associated with similar but distinct gene expression patterns in papillary thyroid cancer. Oncogene. 2004;23:7436-7440. [Crossref] [PubMed]

105. Belfiore A, Garofalo MR, Giuffrida D, Runello F, Fioletti S, Fiumara A, Ippolito O, Vigneri R. Increased aggressiveness of thyroid cancer in patients with Graves’ disease. J Clin Endocrinol Metab. 1990;70:830-835. [Crossref] [PubMed]

106. Jarzab B, Wiench M, Fijakiewicz K, Simek K, Jarzab M, Oczko-Wojciechowska M, Wloch J, Czarniecka A, Chmielek E, Lange D, Pawlaczek A, Szafran S, Gubala E, Swierniak A. Gene expression profile of papillary thyroid cancer: sources of variability and diagnostic implications. Cancer Res. 2005;65:1587-1597. [Crossref] [PubMed]

107. Dow KH, Ferrell BR, Anello C. Quality-of-life changes in patients with thyroid cancer after withdrawal of thyroid hormone therapy. Thyroid. 1997;7:613-619. [Crossref] [PubMed]

108. Simpson WJ, Pletscher FL, Carruthers JS, Gospodarowicz MK, Sutcliffe SB. Papillary and follicular thyroid cancer: impact of treatment in 1578 patients. Int J Radiat Oncol Biol Phys. 1988;14:1063-1075. [Crossref] [PubMed]