

## STUDY ON THE INCIDENCE OF CERTAIN TYPES OF NEOPLASTIC DISEASES

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**Keywords:** cancer, types, incidence

**Abstract:** Because of the increased incidence of malignant pathology in individuals, prevention measures must be practically applied by screening programmes. Such measures are considered useful to increase citizens' life quality, otherwise serious consequences for health could entail. In this context, this study comparatively presents the incidence of types of malignant pathologies found in the last quarter of 2012 and in the first quarter of 2013, in the specialized service, according to the information collated within a database. The study was made possible through collaboration with the specialty medical staff. To evaluate the incidence of the malignant pathology across the period, the study was carried out by analyzing the types of malignant pathologies, taking into consideration the residence environment of the patients, sex, newly found and diagnosed cases, together with the cases already on records. The conclusion was that women are the most affected group, with those residing in urban areas showing the highest level of incidence. This data is of importance to the healthcare sector, especially when considering that neoplastic pathology has a harmful prognostic on both health and quality of life.

**Cuvinte cheie:** cancer, tipuri, incidență

**Rezumat:** Datorită incidenței crescute a patologiei maligne în rândul populației, se impune aplicarea practică a măsurilor de prevenție, prin programe de screening. Aceste măsuri se consideră utile în scopul asigurării calității vieții cetățenilor, în caz contrar având frecvent, urmări defavorabile asupra sănătății. În context, studiul de față prezintă comparativ, incidența unor tipuri de patologii maligne, depistate în ultimul trimestru al anului 2012 și în primul trimestru al anului 2013, în serviciul de specialitate de profil, conform informațiilor din baza de date. Din acest punct de vedere, studiul a fost posibil prin colaborarea cu cadrele medicale de specialitate. Pentru evaluarea incidenței patologiei maligne, în perioada investigată, studiul s-a făcut analizând tipurile de patologii maligne, conform informației din baza de date, ținând cont de mediul de domiciliu al bolnavilor, sex, cazuri nou depistate și diagnosticate precum și cazurile rămase în evidență. Concluzia a fost că femeile sunt grupul cel mai afectat, respectiv cele care locuiesc în zonele urbane și care prezintă cel mai înalt nivel de incidență. Aceste date prezintă o importanță pentru sectorul de sănătate, mai ales având în vedere că patologia neoplazică are un prognostic negativ asupra sănătății și a calității vieții.

### INTRODUCTION

In today's society, the high incidence of the malignant tumour pathology has reached significant proportions.(3,5,12,17,19) This is due to a complex series of factors relating to the malignant change of the body cells of various organs and systems.(2,13,14) Among the determining factors in inducing the occurrence of malignant processes there are both external factors and genetic factors.(11,12,20) From this perspective, we are aware of the existence of proto-oncogenes whose activity leads to their change into oncogenes which, when functionally active, in turn leads to the their involvement in the development of malignant tumours.(6,10,15)

The external factors concurring to the development of the neoplastic diseases include the environment factors, emissions, pollution, inappropriate and nutrient-imbalanced diet.(8,21) It is also important to include as risk factor for neoplastic disease the day-to-day stress of each and every individual feels, especially those residing in the big cities and by the intellectually active people. From this perspective, it is necessary to take into consideration the increase in the incidence

of certain types of neoplastic diseases in various geographical areas.(7,18)

Taking into account the determining factors of neoplastic diseases, extended pathology today requires a thorough application of the screening methods across the population. The aim here is to lead to a decrease of malignant diseases per head of population.(1,4,9,22)

### PURPOSE

This study analyses the various types of neoplasia found in the specialized healthcare facility of the state service in the last quarter of 2012 and in the first quarter of 2013. In this context, the study was a comparative based study into the various types of analyzed cancers across the aforementioned periods, according to information held in databases and provided with the consent of the specialized medical staff. The comparative analysis of the neoplastic diseases across the time period enabled the study to identify the incidence rate and the extent of malignant tumours in relation to the two investigated periods.

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**METHODS**

As this study was undertaken in order to analyze various types of neoplasia in different time periods afferent to the winter season, the information analysis represents an evaluation method of the population sickness. From this perspective, it is important to emphasize that an individual considered healthy is regarded as an apparent condition.

To carry out the study, the consent of the medical staff was first obtained. Following this, we proceeded to reviewing, evaluating and processing the data according to the specialized database. From this starting point, we made a comparison between the patients' cases and certain types of neoplasia. Given that this is a comparative study that includes the cases from the fourth quarter of 2012 and the first quarter of 2013, we took into consideration the factors that influence certain types of neoplasia. Therefore, we analyzed the total number of found neoplasia cases and the newly diagnosed and recorded cases.

The study was made on types of neoplasia, per gender and residence environment of the patients. As neoplastic pathology has high mortality rate the study also included an analysis of the new recorded cases and of the cases already recorded. The neoplastic diseases investigated by this study were: skin cancer, gastric cancer, bronchopulmonary cancer, breast cancer and prostate cancer.

**RESULTS**

According to the study data in the fourth quarter of 2012, 230 patients were declared to have newly found cases of neoplastic pathology; of which 152 came from the urban area and 78 came from the rural environment.

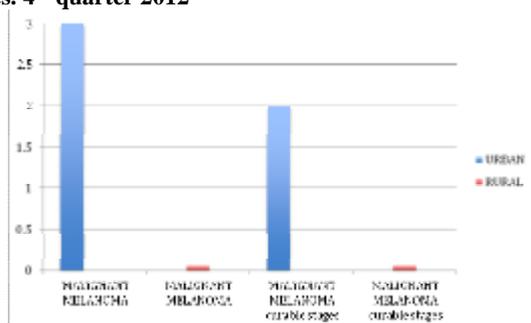
The statistic data enabled the evaluation of the patients having malignant melanoma, bronchopulmonary cancer, stomach cancer, breast cancer and prostate cancer.

As the analyzed cases included only newly found cases (with the total number of cases being significantly higher), the statistical evaluation also included the calculation of the total number of patients still registered in the medical records for these pathologies which were often of a lethal prognostic.

Consequently, from a total number of directly observed neoplasia therapy patients in the healthcare facility, the total number of patients still registered in the records is of 9,261. Of these, 7,201 came from the urban environment and 2,060 from the rural environment. We took into account the number of curable patients within the statistical evaluation.

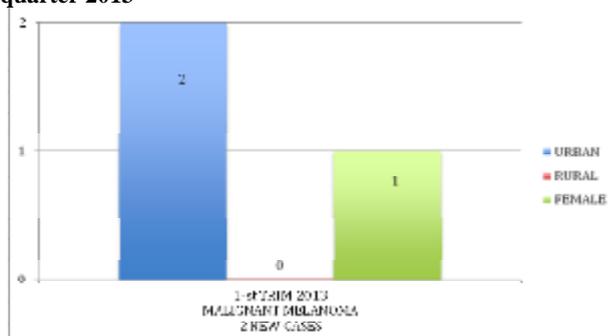
Assessing the curable cases found with malignant melanoma in the last quarter of 2012, the analysis of the data reveals a high incidence of this malignant pathology in the urban environment. Thus, out of 3 cases of malignant melanoma found in the last quarter of 2012, there were three cases from the urban environment and zero cases from the rural environment (two cases were curable). This is illustrated in figure no. 1.

**Figure no. 1. Malignant melanoma. Found cases and curable cases. 4<sup>th</sup> quarter 2012**



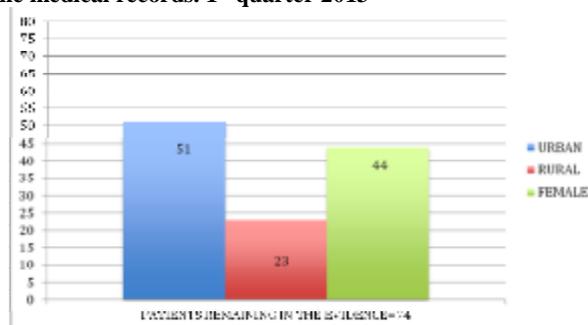
As a comparison, in the first quarter of 2013 the incidence of malignant melanoma shows the affectation of females in relation to the confirmation of new cases to be the same as the cases already registered in the records, considering the negative impact of the patients' lives. Thus, both newly found cases came from the urban environment: one female and one male (figure no. 2).

**Figure no. 2. Malignant melanoma. Newly found cases. 1<sup>st</sup> quarter 2013**



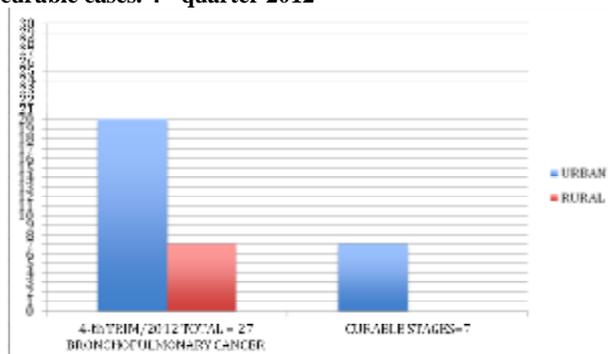
As the malignant melanoma is pathology of high metastasis potential, namely an unfavourable prognostic sometimes fatal for life, the study enabled the analysis of the patients still registered in the medical records coming from both the urban and the rural environment. We also evaluated the number of female patients still alive considering the potentially lethal prognostic of the disease (figure no. 3).

**Figure no. 3. Malignant melanoma. Cases still registered in the medical records. 1<sup>st</sup> quarter 2013**



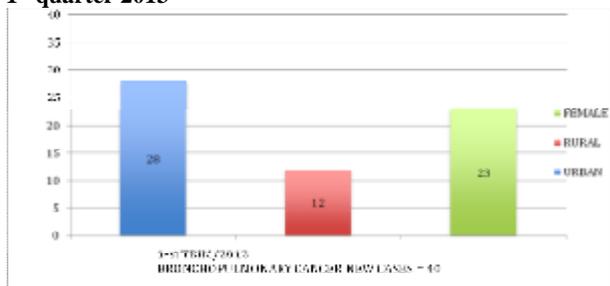
The analysis of the bronchopulmonary cancer enabled an evaluation of the cases for the fourth quarter 2012. We took into account the curable cases and the patients coming from various residence environments, namely urban and rural (figure no. 4).

**Figure no. 4. Bronchopulmonary cancer. Found cases and curable cases. 4<sup>th</sup> quarter 2012**



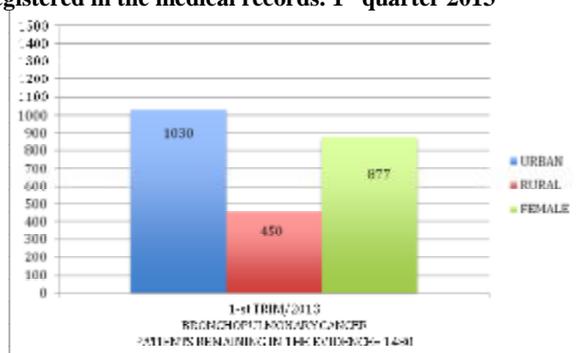
The study included the evaluation of bronchopulmonary cancer considering the newly found cases in the first quarter of 2013. Here, we noticed the high incidence of this pathology in the urban environment and we considered the cases affecting female subjects (figure no. 5).

**Figure no. 5. Bronchopulmonary cancer. Newly found cases. 1<sup>st</sup> quarter 2013**



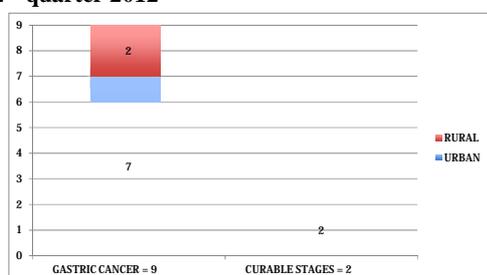
Moreover, the study enabled the analysis of the patients still registered in the medical records, considering the lethal prognostic of this pathology (figure no. 6).

**Figure no. 6. Bronchopulmonary cancer. Cases still registered in the medical records. 1<sup>st</sup> quarter 2013**



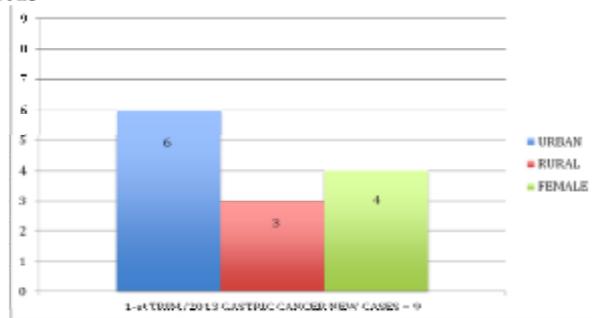
The neoplastic pathology encountered in the gastrointestinal tract affects various segments within the tract. As such, the study included data relating to the gastric neoplastic pathology. Therefore, in the last quarter of 2012 this study found several cases. Here, patients from the urban environment were compared to the patients from the rural environment. The data showed that the disease curability ratio was higher in the urban environment (figure no. 7).

**Figure no. 7. Gastric cancer. Found cases and curable cases. 4<sup>th</sup> quarter 2012**



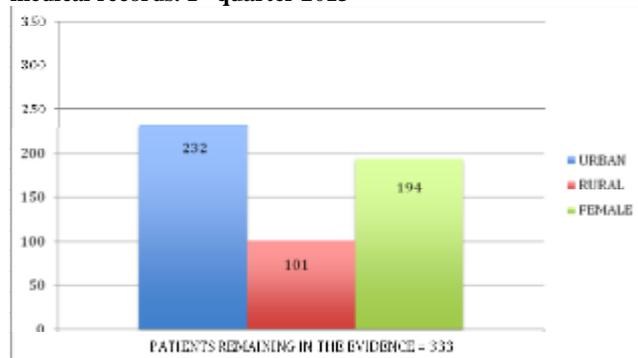
Considering more recent data, the gastric malignant pathology in the first quarter of 2014 shows the newly encountered cases occur more often in the urban environment than in the rural environment. Furthermore, the study presents the affectation of females (figure no. 8).

**Figure no. 8. Gastric cancer. Newly found cases. 1<sup>st</sup> quarter 2013**



The study enabled the evaluation of the cases still registered in the medical records from the total diagnosed cases. In addition, we took into consideration the number of the female patients affected (figure no. 9).

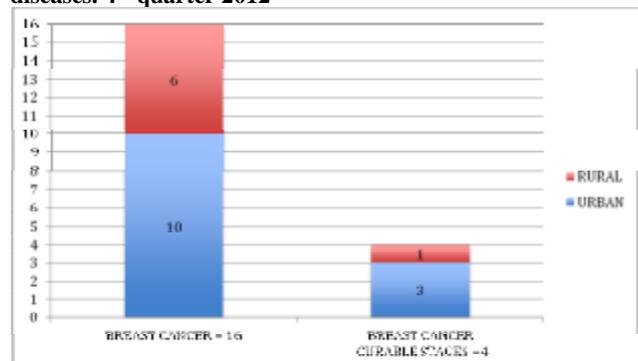
**Figure no. 9. Gastric cancer. Cases still registered in the medical records. 1<sup>st</sup> quarter 2013**



Besides the cases of neoplasia analyzed in this study, we referred to the neoplasias encountered both in males and in females affecting the breast and prostate. Since the frequency of the breast cancer is currently high, this study analyzed the cases of the last quarter of 2012.

The data analysis examined the high incidence of breast cancer in the urban environment compared to the rural environment and it also evaluated the curable stages, of which there are a large number in the urban environment compared to the rural environment (figure no. 10).

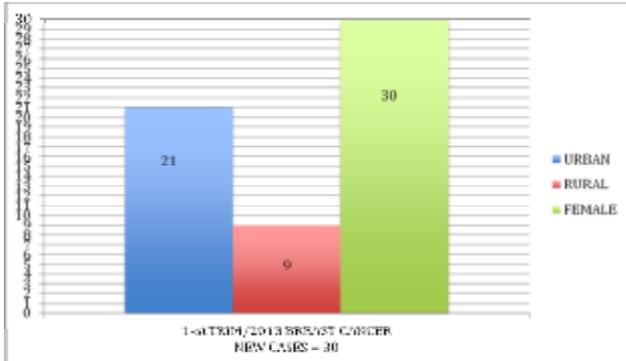
**Figure no. 10. Breast cancer. Found cases and curable diseases. 4<sup>th</sup> quarter 2012**



Breast cancer, which contemporaneously is a significantly frequent disease, was evaluated from the perspective of the incidence of the new cases found in the first quarter of 2013 according to the residence environment of the female patients. Here we noticed more significant affectation of

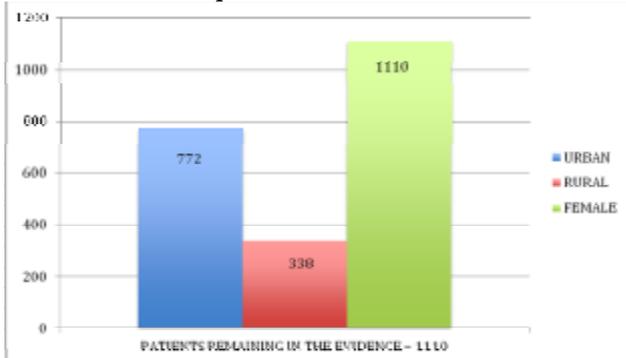
women from the urban environment compared to those from the rural environment (figure no. 11).

**Figure no. 11. Breast cancer. Newly found cases. 1<sup>st</sup> quarter 2013**



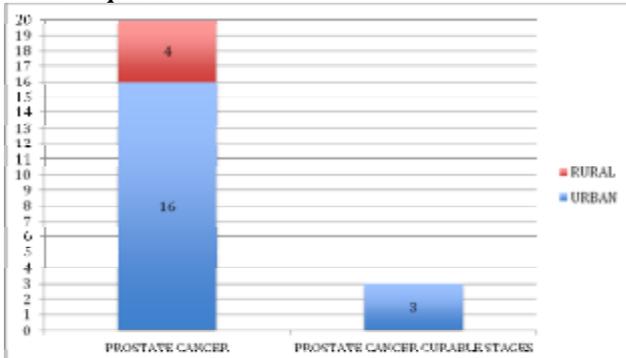
Considering the harmful impact on health of breast cancer, by prognostic and by the time of diagnosing, the study enabled the evaluation of the cases still registered in the medical records for the female subjects (figure no. 12).

**Figure no. 12. Breast cancer. Cases still registered in the medical records. 1<sup>st</sup> quarter 2013**



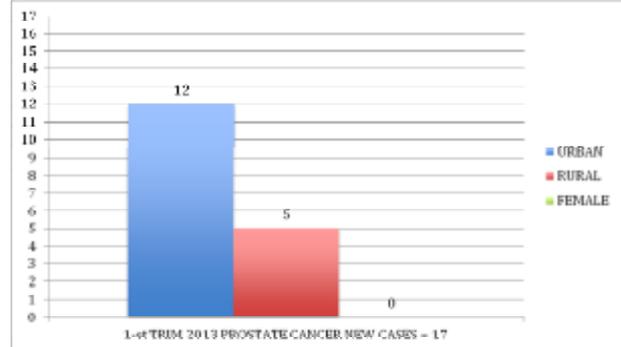
The malignant pathology frequently encountered by male subjects is prostate cancer. As such, the study enabled the evaluation of the cases diagnosed in the last quarter of 2012. From this perspective, we noticed the high frequency of prostate cancer cases in the urban environment. In this environment the curable stages are far more numerous compared to those of the rural environment (where the cancer is more likely to be incurable) (figure no. 13).

**Figure no. 13. Prostate cancer. Found cases and curable cases. 4<sup>th</sup> quarter 2012**



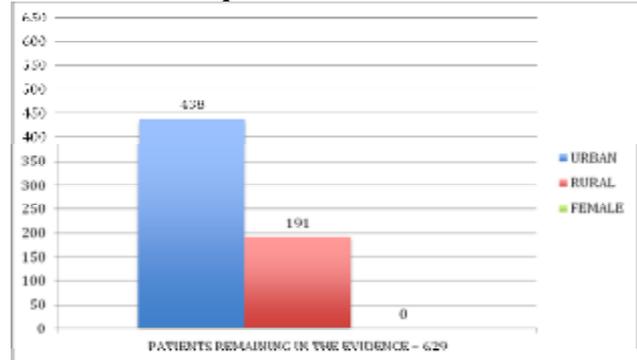
At the same time, due to the risk factors, the incidence of prostate cancer is higher for the male subjects coming from the urban environment (figure no. 14).

**Figure no. 14. Prostate cancer. Newly found cases. 1<sup>st</sup> quarter 2013**



According to the analysis of the study data, there are more patients still registered in the medical records with prostate neoplasm in the urban environment compared to those of the rural environment (figure no. 15).

**Figure no. 15. Prostate cancer. Cases still registered in the medical records. 1<sup>st</sup> quarter 2013**



**DISCUSSIONS**

The data collected for the study was subject to a multi-part statistical analysis. This took into consideration the impact of neoplastic diseases on health. From this point of view, we carried out an evaluation of the different neoplastic diseases types. The analysis revealed that in the first quarter of 2013, there were 253 newly recorded cases. Of these new cases, 176 came from the urban environment and 77 came from the rural environment. Therefore, the majority of cases (70%) related to individual living within an urban environment. Of all these cases (urban and rural combined), 150 were female subjects and 103 were male subjects; thus females made up the majority (59%) of the newly recorded cases.

The statistics relating to the total cases of patients still registered in the medical records revealed that there were 9,364 patients. Of this total, 5,267 came from individuals residing within the urban environment and 4,097 from individuals residing in the rural environment. Thus, there was a clear majority (56%) of incidences of neoplastic disease occurring in people who resided within an urban environment. This was a similar pattern seen for the newly confirmed cases, as discussed above.

With the total number of cases recorded, there were 5,552 female patients and 3,812 male patients. Thus, as with the newly recorded cases the number of female cases represented

the majority (in this case 59%, which was the same proportion as shown with the newly recorded cases).

The study was carried out on the same types of neoplastic pathologies. We took into consideration the new cases, the cases still registered in the medical records, the cases of women, and the residence environment of the patients: urban or rural. The total number of cases and the newly recorded cases showed a level of consistency in that, across the data sets, the highest prevalence of neoplastic cases was with women and for those residing within urban environments. Therefore, the highest proportion of cases was for women who reside within an urban environment.

### CONCLUSIONS

This analysis has examined data and the configuration of the incidences for various types of malignant pathologies across successive quarters. The data analysis presented the information in relation to various categories of population health evaluation.

The data relating to neoplastic diseases suggests that there is an increasing number of female cancer patients coupled with a reduction in the possibility of such individual being cured. The incidences were greatest for women living in urban areas. The harmful prognostic on the lives of women in this 'at risk' group is dramatic and these diseases have a negative impact upon the individuals' health and life quality.

We suggest that the inferences from our findings should lead to a review of health policy. Health agencies must implement and permanently apply screening, prevention and control programmes in order to strengthen the life quality of citizens. The focus of such a strategy should be directed towards women within the identified risk groups.

### REFERENCES

1. Brehmer F, Ulrich M, Haenssle HA. Strategies for early recognition of cutaneous melanoma-present and future. *Dermatol Pract Concept* 2012 Jul 31;2(3):203a06.
1. Calzavara-Pinton P, Longo C, Venturini M, Sala R, Pellacani G. Reflectance confocal microscopy for in vivo skin imaging. *Photochem Photobiol* 2008 Nov-Dec;84(6):1421-30.
2. Catalona WJ, Richie JP, Ahmann FR, Hudson MA, Scardino PT, Flanigan RC, deKernion JB, Ratliff TL, Kavoussi LR, Dalkin BL. Comparison of digital rectal examination and serum prostate specific antigen in the early detection of prostate cancer: results of a multicenter clinical trial of 6,630 men. (PMID:7512659), Division of Urologic Surgery, Washington University School of Medicine, St. Louis, Missouri. *The Journal of Urology* 1994, 151(5):1283-1290.
3. Correa P. *Helicobacter pylori* and gastric carcinogenesis. Department of Pathology, Louisiana State University Medical Center, New Orleans 70112, USA. *The American Journal of Surgical Pathology* 1995, 19 Suppl 1:S37-43.
4. Gareau D, Hennessy R, Wan E, Pellacani G, Jacques SL. Automated detection of malignant features in confocal microscopy on superficial spreading melanoma versus nevi. *J Biomed Opt.* 2010 Nov-Dec;15(6):061713.
5. Hubbard JG, Nkere UU, Azhar R. A complication of a long-standing solitary lung cyst. *Semin Arthritis Rheum* 1980 Feb;9(3):191-217.
6. Hurley P, Corbishley C, Pepper J. Bronchioloalveolar carcinoma arising in longstanding lung cysts. *Postgrad Med J.* 1997 September; 73(863):595-596.
7. Kang HY, Bahadoran P, Ortonne JP. Reflectance confocal microscopy for pigmentary disorders. *Exp Dermatol* 2010 Mar;19(3):233-9.
8. Kurugol S, Dy JG, Rajadhyaksha M, Gossage KW, Weissman J, Brooks DH. Semi-automated Algorithm for Localization of Dermal/ Epidermal Junction in Reflectance Confocal Microscopy Images of Human Skin, *Proc SPIE.* 2011;7904:7901A.
9. Lee ML, Tomsu K, Von Eschen KB. Duration of survival for disseminated malignant melanoma: results of a meta-analysis. *Contemp Oncol (Pozn)* 2012;16(6):532-45.
10. Linnoila RI. Spectrum of neuroendocrine differentiation in lung cancer cell lines featured by cytomorphology, markers, and their corresponding tumors. *J Cell Biochem* 24 (suppl.), 92-106 (1996). *Thorax.* 1985 December; 40(12):960.
11. Mastrangelo G, Fedeli U, Fadda E, Milan G, Turato A, Pavanello S. Lung cancer risk in workers exposed to poly(vinyl chloride) dust: a nested case-referent study. *Occup Environ Med* 2003 Jun;60(6):423-8.
12. Neugut AI, Hayek M, Howe G. Division of Epidemiology, School of Public Health, Columbia University, New York, NY., USA., Epidemiology of gastric cancer. *Seminars in Oncology* 1996, 23(3):281-291.
13. Panzini I, Gianni L, Fattori PP, Tassinari D, Imola M, Fabbri P, Arcangeli V, Drudi G, Canuti D, Fochessati F, Ravaoli A. Adjuvant chemotherapy in gastric cancer: a meta-analysis of randomized trials and a comparison with previous meta-analyses. Division of Medical Oncology, Ospedale Infermi, Rimini, Italy. *Tumori* 2002;88(1):21-27.
14. Bale SJ, Dracopoli NC, Tucker MA, Clark WH Jr, Fraser MC, Stanger BZ, Green SP, Donis-Keller H, Housman DE, Greene MH. Mapping the Gene for Hereditary Cutaneous Malignant Melanoma-Dysplastic Nevus to Chromosome Lp, *N Engl J Med* 1989;May 25;320:1367-1372.
15. Stolz W, Semmelmayr U, Johow K, Burgdorf WH. Principles of dermatoscopy of pigmented skin lesions. *Semin Cutan Med Surg* 2003 Mar;22(1):9-20.
16. Turner-Warwick M. Clinical aspects of protective immunity of the respiratory tract. *Thorax* 1975 Dec;30(6):601-11.
17. Catalona WJ, Smith DS, Ornstein DK. Prostate Cancer Detection in Men With Serum PSA Concentrations of 2.6 to 4.0 ng/mL and Benign Prostate Examination Enhancement of Specificity With Free PSA Measurements *JAMA* 1997;277(18):1452-1455.
18. Wolfe JN. Risk for breast cancer development determined by mammographic parenchymal pattern, Copyright © 1976 American Cancer Society, Article first published online: 28 JUN 2006, 10.1002/1097-0142(197605)37:5<2486::AID-CNCR2820370542>3.0.CO;2-8.
19. Wolfe JN. The prominent duct pattern as an indicator of cancer risk. *Oncology* 1969;23:140-158.
20. Wolfe JN. A study of breast parenchyma by mammography in the normal woman and those with benign and malignant disease. *Radiology* 1967;89:201-205.
21. Wolfe JN. Mammography: Ducts as a sole indicator of breast carcinoma. *Radiology* 1967;89:206-210.