Abstracts for the Neil White Memorial Seminar

Predicting mesothelioma incidence in South Africa

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Introduction: The Asbestos and Kgalagadi Relief Trusts have, since 2004, financially compensated 4 387 victims of asbestos-related disease, 318 of whom had malignant mesothelioma. It is important for the Trusts to tightly estimate future cases. Existing projections vary by country and methods used, and have drawn on data from Australian mining and from countries which imported and used asbestos. There are no South African projection models.

Methods: Methods are being developed to predict the number of mesothelioma cases over the next 10 years. The methodology will be based on data from employment records as well as claimants to the Trusts, adapting the classical, deterministic and Bayesian methods used in other countries. Available data include time periods of exposure, asbestos fibre measurements, year of birth, age at first and last exposure, and duration of employment.

Results: The models will be based on the number of asbestos mine employees in the Trusts designated areas and time periods, and the variables listed above. Several methods will be developed and then tested against observed data. The model with the best fit will be selected for prediction purposes.

Discussion: This work is essential for the Trusts to equitably allocate funds over the next two decades.

Mesothelioma In South Africa 3 Decades Post Peak of Asbestos Production: An analysis of a claims database of asbestos ex-miners.

Dr Mokgadi Mothemela - School of Public Health & Family Medicine, University of Cape Town, Cape Town, South Africa.

Introduction: The peak in production of the three forms of asbestos commercially mined in South Africa occurred between 1970 and 1977. Given the latency period, we should expect to observe a rise in the incidence of mesothelioma throughout this decade. The study's main objective was to describe the proportions of mesothelioma cases by various characteristics.

Methods: A cross-sectional study was conducted by reviewing a database kept by the Asbestos Relief Trust and the Kgalagadi Relief Trust. All the individuals with mesothelioma were included in the study.

Results: Of the 14 095 claimants registered, 295 (2.09%) had mesothelioma. Of these, 54.24 % were black, 7.80% colored and 37.97% white. The main fibre type that claimants were exposed to was blue (93.88%). There were no claimants who had exclusive exposure to chrysotile. A remarkable number of mesothelioma claimants came from Kuruman (16). The median duration of exposure was 2.94 years (IQR: 0.13; 38).The overall median latency was 34 years (CI: 32.64- 35.36).

Discussion: The proportion of mesothelioma is high. Black miners are still under represented. Judging from the high numbers of mesothelioma in the Northern Cape villages, urgent completion of rehabilitation of mine dumps is vital to stop further environmental exposure.

Clinico-pathological correlation of asbestos-related disease in ex-miners

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Introduction: It is important to make accurate diagnoses of asbestos-related diseases (ARDs) not only because they cause respiratory impairment and death, but also for compensation purposes. In the clinical setting, diagnoses of fibrotic asbestos related disease are defensibly made without the aid of pathology. American studies have reported that 44% of chest radiographs in biopsy-proven asbestosis were read as negative. Recent clinico-pathological studies in asbestos related diseases are sparse.

Methods: We compared the diagnoses of asbestosis, mesothelioma and lung cancer using in-life clinical, and post-mortem pathological, results. Consecutive autopsies of all deceased Asbestos Relief Trust claimants whose cardio-respiratory organs were submitted to the National Institute for Occupational Health for examination and reported on from May 2010 to May 2011 were studied. Sensitivities, specificities and related values were calculated.

Results: All 94 cases coming to autopsy had been assessed in-life using chest radiographs and, in known malignancies, biopsies. The median age at death was 66 years and in the malignancies was 64. Pathological ARDs were diagnosed at autopsy in 78 (83%) of the cases: 47 (50%) asbestosis cases, 20 (21%) mesotheliomas and 15 (16%) lung cancers.
Sensitivity, specificity and accuracy rates for the clinical diagnoses were 47%, 83% and 65% for asbestosis; 65%, 96% and 89% for mesothelioma and 40%, 100% and 90% for lung cancer respectively. Using an ILO grading of 1/0 and above for the clinical diagnosis of asbestosis, there were 25 (53%) false negative cases. Of the mesotheliomas, 3 had been misdiagnosed as lung cancer and 7 cases had been missed in life. No false positive diagnoses of lung cancer were made but 9 (60%) of the cases had not been diagnosed in life.

Discussion: The accuracy of clinical assessment for asbestosis was 65% and ~90% for malignancies. Despite prior contact with the Trust, 16 cases of malignancy went undiagnosed in life. These findings underline the importance of the autopsy service.

Spectrum of disease in 13000 ex-asbestos miners

Dr Jim teWaterNaude – Asbestos Relief Trust and University of Cape Town

Introduction: Two Trusts were set up to compensate people who had contracted asbestos-related diseases as a direct result of past mining of all three commercial types of asbestos in rural areas of South Africa.

Method: From 2004, the Trusts set up active surveillance mainly using GP's to do chest radiography, spirometry, and medical examinations. Files were read in Cape Town by a panel of specialists, using the ILO system and spirometry to adjudicate for compensation.

Results: Of 15 458 occupational claimants, the results of 12991 were usable. 84.2% were male and 9.7%, 78% and 12.3% had mainly amosite/brown, crocidolite/blue and chrysotile/white asbestos exposure. Median age at presentation was 52 years (IQR 46-60), with age at first exposure being 22 years, and latency (time since first exposure) 28 years, with no differences by asbestos type.
Overall 44.5% of claimants (95% CI 43.6 – 45.4) had radiologically visible fibrotic asbestos related disease, with 278 (2.1%) mesotheliomas and 78 (0.6%) lung cancers detected.
Amosite was the most fibrogenic, and crocidolite the most mesotheliomagenic fibre.

Discussion: The burden of disease is massive and ongoing. The proportion of detected lung cancer is low compared to other settings, and the lack of amosite caused mesothelioma is puzzling.

An overview of asbestos-related pleural diseases

Dr Spo Kgalamono - National Institute for Occupational Health, NHLS, School of Public Health, University of the Witwatersrand, Johannesburg, South Africa

Introduction: Benign pleural disease is the commonest manifestation of asbestos exposure encountered by practitioners. Benign pleural disease can appear as circumscribed parietal pleural plaques or as more diffuse thickening of the visceral pleura. Diffuse pleural thickening may be associated with functional impairment for which compensation may be sought. Pleural effusions are a significant and under-recognized manifestation of asbestos exposure which can be misdiagnosed as TB. This presentation concentrates on exposure history, symptoms, differential diagnoses, radiology, lung function testing, investigation for possible asbestosis and compensation issues.

Methods: Questions on how often cases with pleural disease only should be followed up and whether people with benign pleural disease are at an increased risk for lung cancer will be discussed based on evidence from the literature.

Diagnosing asbestosis

Prof D. J. Rees - National Institute for Occupational Health, NHLS, School of Public Health, University of the Witwatersrand, Johannesburg, South Africa

Introduction: A large number of southern Africans have been exposed to asbestos and asbestosis needs to be considered in the differential diagnosis of patients presenting with clinical features suggestive of the diagnosis. A reliable diagnosis is necessary, however, to avoid missing treatable conditions and to ensure that compensation and other benefits are allocated appropriately.

Methods: Based on current literature, an approach to diagnosing asbestosis will be presented that includes the exposure history, symptoms, clinical examination, radiology, lung function testing, special investigations and indications to refer for specialist opinion. Options for monitoring of patients for disease progression will be covered.

The literature on industries and jobs producing asbestosis in the region will be reviewed and a case with typical features of asbestosis will be presented.

Mesothelioma – 50 years after Sleggs and Wagner

Dr Jim teWaterNaude – Asbestos Relief Trust and University of Cape Town

Introduction: Wagner et al published their landmark articles linking asbestos with mesothelioma in 1960 and 1961. Sleggs's key recognition was that the chest x-ray whiteouts were not fulminant TB. The asbestos industry however flourished thereafter, with peak production and therefore occupational exposure occurring in the mid-1970's. Because of the long latency, the Northern Cape mesothelioma incidence will probably peak in this decade. The Asbestos and the Kgalagadi Relief Trusts have a renewed focus on mesothelioma.

Method: Using photos and images and some interesting data, this talk will give the clinician an appreciation of this modern epidemic and pointers on how to manage individual cases taken from the author's personal experiences of this disease and current medical literature and academic interactions. Core new aspects include VATS, Immunohistochemistry, talc pleurodesis, pemetrexed and early attention to palliative care.

The A-Z curriculum: Apoptosis, Blue and brown asbestos, Chrysotile and confusion, Diagnostic difficulties, Extrapleural pneumonectomy, Fibre-types and sizes, Genetics, Hospice and Histology, Immunohistochemistry, January and July, Kuruman and Koegas, Lymphatics, Markers, Nought/One staging, Optimal management, Pleurodesis, Quebec, Relief and Radiotherapy, Screening, symptoms and scalpels, Tumor reduction, Untreatability and Uncertainties, Video Assisted Thoracoscopic Surgery (VATS), White-outs, X-rays, You-tube, and Zimbabwe and BRICS.

Lung Cancer: An Update for the Clinician.

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Introduction: The aim of this talk is, (i) to describe a current clinical perspective of lung cancer surgery in SA and, (ii) to provide an update on recent international developments in the field of lung cancer.

Methods: The performance gap between the burden of disease and the actual number of resections performed in SA was explored in a mixed methods study between 2004 and 2008. The update is based on presentations made at the recent 14th World Lung Cancer Conference of the IASLC.

Results: Burden of disease data shows lung cancer to be the most frequent cause of cancer mortality in SA, accounting for 17% of annual cancer mortalities. Surgical requirements based on a resectability rate of 10% – 20% are estimated to be between 1320 and 2600 lung resections per annum. Actual service delivery recorded less than 100 resections per annum with a performance gap of approximately 1:20.

Discussion:
Lung cancer is a potentially curable disease in selected patients if detected early enough to permit complete surgical resection. Whilst there are many promising developments in the treatment of lung cancer, SA surgery is not developing apace with international trends. This study shows that 95% of resectable and operable SA patients are currently not undergoing a potentially curative resection.
