Implementation and clinical audit of a virtual thoracic oncology MDT in a low-resource setting in Malaysia

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ABSTRACT

Introduction: Cancer care is increasingly complex, and in Sarawak, Malaysia, geographic and resource limitations further complicate management. This clinical audit describes the implementation, structure and workflow of a virtual thoracic oncology multidisciplinary tumor board (MDT) in a resource-limited setting, and describe the cases discussed and key issues raised.

Materials and Methods: A MDT was established in Sarawak, comprising pulmonologists, oncologists, pathologists, thoracic surgeons, and radiologists. Monthly virtual meetings were held to discuss complex cases. This retrospective study analyzed cases from July 2022 to December 2024, focusing on cancer types, challenges, and recommendation. As an audit of clinical practice, no treatment adherence or outcome measures were assessed.

Results: A total of 94 cases were discussed (median age 60 years; 59.6% male). Cases per year: 21 (2022), 24 (2023), and 49 (2024). Common diagnoses included lung cancer (48.9%), lung lesions from other solid cancers (26.6%), suspected lung cancer (12.8%), non-malignant respiratory conditions (9.6%), and thymic cancer (2.1%). Among solid cancers with lung lesions, colorectal cancer (36%) was most frequent, followed by breast (12%), gynaecological (12%), sarcoma (8%), and others (32%). The main reasons for MDT discussions were therapeutic issues (58.5%) and diagnostic challenges (41.5%). Imaging review (83%) and management discussions (80.9%) were the most common points of discussion. Among 46 lung cancer patients, 43.5% had early-stage, 30.4% locally advanced, and 19.6% metastatic disease. Key recommendations included surgery (35.1%), surveillance (16%), systemic therapy (13.8%), biopsy (11.7%), PET/MRI (7.4%), EBUS staging (5.3%), radiotherapy (4.3%), and clinical trials (2.1%).

Conclusion: This audit demonstrates that a virtual thoracic oncology MDT is feasible and can standardize multidisciplinary discussion, and improve access to specialist input in a resource-limited setting. While clinical outcomes were not evaluated, this audit provides insight into operational processes. Future prospective work incorporating structured data collection, MDT adherence and integration of electronic health records will help evaluate the MDT's impact on patient outcomes and guiding service improvement.

KEYWORDS:
Thoracic Oncology, Multidisciplinary Tumor Board, Sarawak, Resource-limited setting

INTRODUCTION

Cancer remains a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020—approximately one in six deaths.[1] In Malaysia, with a population of over 34 million, lung cancer is the third most prevalent cancer and the leading cause of cancer-related mortality, underscoring the need for an integrated approach to treatment.[2] Sarawak, located on the island of Borneo, faces unique challenges in cancer care due to its vast geographical expanse and limited access to specialized healthcare services.[3] These challenges make the need for an integrated and collaborative treatment approach even more critical.

Over the past decades, continuous efforts have been made to enhance cancer care through advancements in diagnostics and therapeutic options. Improved diagnostic methods, more precise staging systems, and the advent of novel treatments have significantly advanced patient management. However, these developments have also introduced new challenges in delivering effective cancer care.[4] The increasing complexity of cancer treatment underscores the necessity of a multidisciplinary approach to optimize patient outcomes. A thoracic oncology Multidisciplinary Tumor Board (MDT) brings together oncologists, pulmonologists, pathologists, thoracic surgeons, and radiologists to provide comprehensive, evidence-based care.[5] This collaborative framework strengthens decision-making, ensuring that each patient receives a personalized and well-informed treatment strategy.

MDT has become an indispensable component of high-quality cancer care and is strongly endorsed by various international guidelines, including the American Society of

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Clinical Oncology and the European Society for Medical Oncology guidelines.[6-7] Numerous studies have demonstrated the impact of MDT in delivering safe, high-quality care. The benefits of MDT include precise disease staging, improved clinical-radiological-pathological correlation for accurate diagnosis, and the development of appropriate treatment plans, ultimately leading to more efficient care with shorter time to treatment.[8] Additional benefits include the education of junior physicians, the prevention of overtreatment through appropriate diagnostic selection, the identification of patients for clinical trials, and identification of patients who may benefit from early palliative care.[8-9] Most importantly, thoracic oncology MDT, by ensuring the timely delivery of best evidence-based care, have been shown to improve overall survival and quality of life for patients.[9-10]

Despite having its established position internationally since 1995, there remains challenges on how a MDT should be delivered at its best efficiency, the scale of its impact and the ways clinical research be integrated in MDT discussion.[11] In Malaysia, with a population of over 34 million, where only 8,953 specialists serve in the public sector, efficient resource management is crucial to maximizing the effectiveness of MDT meetings.[12] Beyond workforce limitations, geographical barriers further hinder the delivery of high-quality cancer care, as many patients receive treatment in hospitals without in-house subspecialist support.[13] Given these constraints, ensuring the effective and efficient implementation of MDTs is essential to providing the best possible patient care. At present, evidence describing MDT implementation in Malaysia, particularly in resource-limited or geographically challenging settings remains scarce. To address this gap, this clinical audit describes the structure, workflow and implementation of a virtual thoracic oncology MDT in Sarawak, Malaysia. We present an audit of our MDT processes, review the spectrum of cases discussed and summarizes the recommendations arising from these meeting. This work aims to provide insight into how a virtual MDT can be effectively established in resource-limited and geographically challenging environments.

MATERIALS AND METHODS

Audit background and objectives

The thoracic oncology MDT at Sarawak General Hospital (SGH) was established in 2021 as part of a service-improvement initiative to enhance the coordination and quality of care for complex thoracic oncology cases in a resource-limited setting. The MDT comprises pulmonologists, oncologists, pathologists, thoracic surgeons, and radiologists, and meets monthly via the virtual Zoom platform to facilitate participation from health care providers across Sarawak and specialists across Malaysia with real-time sharing of patients' information (Figure 1). The virtual platform was selected to overcome the geographical challenges of serving a large, sparsely populated state with limited specialists' availability.

This clinical audit aims to describe the implementation of a virtual thoracic oncology MDT in Sarawak and evaluate the clinical characteristics and discussion outcomes of cases presented in the MDT. As an audit of practice, the focus is on reviewing existing processes, identifying gaps and informing service improvement rather than demonstrating treatment efficacy or survival outcomes.

The specific objectives of our thoracic oncology MDT include:

a) To provide optimal, personalized, patient-centered management through discussions and recommendations that are based on the best available evidence and consensus, regardless of the patient's geographical location.
b) To create a platform for clinicians to share expertise and knowledge in an open and conducive environment.
c) To foster a cohesive working relationship among different specialties through effective communication.
d) To serve as an educational platform for junior physicians.
e) To facilitate timely referrals between disciplines.
f) To promote research activities and encourage participation in clinical trials.

Audit standard and Pre-MDT Practice

Before the implementation of the thoracic oncology MDT, treatment decisions for thoracic cancer patients were primarily made by individual specialists, with limited input from other disciplines. Typically, the pulmonologist would take the lead in diagnosing the lung cancer and the oncologists would then develop treatment plans based on available imaging, pathology, and clinical assessments. While some cases were discussed informally among specialists, the lack of formalized multidisciplinary collaboration resulted in a less coordinated approach to patient management, particularly for complex or advanced cases. For certain cases, patients may end up seeing many doctors without a unified treatment plan resulting in treatment delay and suboptimal management.

The audit standard used for comparison was the post-implementation of MDT process, characterised by:

- Structured, scheduled monthly meetings
- Mandatory multidisciplinary representation
- Standardized case submission and documentation
- Consensus-based recommendations
- Formal documentation of decisions

As this was a formative audit, no external performance benchmarks were applied.

MDT process and workflow

The MDT meeting is held monthly, typically on the last Friday of the month, and lasts up to two hours via the Zoom platform. Attendees include consultants from each discipline, fellows in training, and medical officers. Given the limited human resources and the commitment required from each specialty, our MDT adopts a targeted approach - only complex cases are discussed, rather than all new lung cancer patients. "Complex" cases were defined as those with diagnostic ambiguity, discordant imaging or pathology findings, or therapeutic dilemmas requiring multidisciplinary input. Eligible cases include thoracic malignancies, non-malignant respiratory conditions and any solid organ cancers with lung lesions. Complex molecular cases requiring MDT input were not covered in this tumor board.

Consultants from various disciplines could submit cases, and the primary team responsible for each patient was required to prepare a concise PowerPoint presentation before the meeting. The presentation had to include the patient's demographic details, diagnosis, molecular profile of lung cancer (if available), relevant imaging, and most importantly, the key discussion points and required specialty input. Cases were submitted at least one week in advance to allow for thorough preparation. During the MDT meeting, the primary team and relevant specialists took turns presenting the patient's clinical information, along with radiology and pathology images, to facilitate discussion. The MDT members then deliberated on each case and reached a consensus on recommendations. Following the meeting, all discussions and recommendations were recorded in an Excel sheet for documentation, audit and future quality-improvement tracking (Figure 2).

Study population and methods

This is a single-center, retrospective clinical audit of all cases discussed in Sarawak Thoracic Oncology MDT between July 2022 to December 2024. Data were obtained through review of MDT records and case database. Variables collected included patient demographics, diagnosis, type of cancer/clinical diagnosis, discussion points, and MDT recommendations. The study was conducted in accordance with the Declaration of Helsinki and was approved by the National Medical Research Register. Given the retrospective nature of the study and anonymized data collection, the requirement for informed consent was waived. Data on survival outcomes, and adherence to MDT were not collected in this audit.

Statistical analysis

The data analysis was performed using the SPSS version 22. Descriptive data will be expressed as mean, frequencies and percentages, unless otherwise stated.

Ethics approval

The study was conducted in accordance with the Declaration of Helsinki, and approved by the National Medical Research Register (NMRR ID-24-01550-GFC).

RESULTS

Patient characteristics (Table I)

From July 2022 to December 2024, the thoracic oncology MDT meeting convened 21 times and a total of 94 patients with complex issues were discussed throughout this period. The average number of patients discussed per MDT meeting was 4.5 (ranging from 2-8). A breakdown of years showed that 21 cases were discussed in year 2022, 24 in year 2023 and 49 in year 2024. The median age of our patients was 60 years (ranging 21 – 78 years), 59.6% were male and 40.4% were female.

The most common diagnosis was lung cancer (n=46, 48.9%), followed by other solid organ cancers with lung lesions (n=25, 26.6%), suspected lung cancer (n=12, 12.8%), non-malignant respiratory conditions (n=9, 9.6%) and thymic cancer (n=2, 2.1%). For patients with lung cancers, the majority were in early stage (n=20, 43.5%), followed by locally advanced disease (n=14, 30.4%) and metastatic disease (n=9, 19.6%). Other solid organ cancers with lung lesions that required thoracic oncology MDT meeting include colorectal cancer (n=9, 36%), breast cancer (n=3, 12%), gynaecological cancer (n=3, 12%), sarcoma (n=2, 8%), and other primary cancers (n=8, 32%).

Main discussion points and outcome of discussion (Table II)

There were various reasons for listing a patient for thoracic oncology MDT discussion. The most common reasons being therapeutic issues (n=55, 58.5%) followed by diagnostic issues (n=39, 41.5%). During the MDT meeting, the main issues that required input were highlighted. Majority of the cases required imaging review by the radiologist (n=78, 83%) and management discussion by the MDT team (n=76, 80.9%). 9 patients (9.6%) required pathology review. In terms of MDT outcomes, the most common recommendations were surgery (n=33, 35.1%), followed by surveillance (n=15, 16%), systemic therapy (n=13, 13.8%), diagnostic biopsy by images-guided/bronchoscopy-guided (n=11, 11.7%), Positron Emission Tomography (PET)/ Magnetic Resonance Imaging (MRI) (n=7, 7.4%), endobronchial ultrasound (EBUS) staging (n=5, 5.3%), radiotherapy (n=4, 4.3%), clinical trial enrolment (n=2, 2.1%), and other recommendations (n=4, 4.3%).

Case illustrations

In this clinical audit, we also illustrate two lung cancer cases in which MDT discussions played a pivotal role in guiding diagnostic evaluation and treatment strategy.

Case 1 (Figure 3)

A 53-year-old never-smoking woman with no comorbidities and ECOG performance status 0 was referred following detection of an abnormal chest radiograph during routine health screening. She was asymptomatic. Computed tomography revealed two right lung nodules (RS1 and RS6, each measuring 1.5cm without mediastinal or hilar lymphadenopathy. FDG PET/CT demonstrated mild uptake in both lung lesions but unexpectedly identified intense uptake in the sigmoid colon, raising concern for a possible primary malignancy.

The case was discussed at our lung MDT, where diagnostic and proposed treatment strategies were discussed. Given the clinical scenario, the possible differential diagnoses include metastatic colon cancer, locally advanced lung cancer or multiple primary lung cancer. During MDT discussion, a stepwise diagnostic approach was recommended, including colonoscopy and endobronchial ultrasound-guided biopsy of both lung nodules, with immunohistochemical testing to exclude a colon primary and molecular testing if lung adenocarcinoma was confirmed.

Colonoscopy revealed a sigmoid polyp, which on histopathological examination showed a tubular adenoma with low-grade dysplasia and no evidence of malignancy. Radial endobronchial ultrasound-guided biopsy and cryobiopsy of both lung lesions confirmed primary lung adenocarcinoma (TTF-1 positive, p40 and CDX-2 negative). Molecular testing demonstrated distinct epidermal growth factor receptor (EGFR) mutations, with L861Q identified in

Table I: Patient characteristics of the study (N=94)

Clinical Characteristics	Numbers (%), [N=94]
Median age (years)	60 (21-78)
Gender	
• Male	56 (59.6%)
• Female	38 (40.4%)
Year of discussion	
• 2022	21 (22.3%)
• 2023	24 (25.5%)
• 2024	49 (52.1%)
Diagnosis	
• Lung cancer	46 (48.9%)
• Other solid organ cancer with lung lesions	25 (26.6%)
• Suspected lung cancer	12 (12.8%)
• Non-malignant respiratory conditions	9 (9.6%)
• thymic cancer	2 (2.1%)
Stages of lung cancers (n=46)	
• Early stage	20 (43.5%)
• Locally advanced	14 (30.4%)
• Metastatic disease	9 (19.6%)
• Missing information	3 (6.5%)
Other solid organ cancers with lung lesions (n=25)	
• Colorectal cancer	9 (36%)
• Breast cancer	3 (12%)
• Gynaecological cancer	3 (12%)
• Sarcoma	2 (8%)
• Others	8 (32%)

Table II: Main discussion points and Outcome of MDT (N=94)

Domains	Numbers (%)
Main reason of listing in MDT	
• Diagnostic issues	39 (41.5%)
• Therapeutic issues	55 (58.5%)
Main point of discussion*	
• Image review	78 (83%)
• Pathology review	9 (9.6%)
• Management discussion	76 (80.9%)
Outcome of MDT	
• Surgery	33 (35.1%)
• Surveillance	15 (16%)
• Systemic therapy	13 (13.8%)
• Diagnostic biopsy	11 (11.7%)
• PET/MRI imaging	7 (7.4%)
• EBUS staging	5 (5.3%)
• Radiotherapy	4 (4.3%)
• Clinical trial enrolment	2 (2.1%)
• Others	4 (4.3%)

*some patients may have more than 1 main point of discussion

the RS1 lesion and L858R in the RS6 lesion, confirming synchronous early-stage primary lung cancers (clinical stage IA2 for both lesions). Following MDT review, the patient was referred for curative-intent surgical management and subsequently placed on surveillance. This case highlights how MDT discussion facilitated accurate staging, avoided misclassification as metastatic disease, and facilitated appropriate curative treatment despite diagnostic complexity.

Case 2 (Figure 4)

A 69-year-old never-smoking man with a background of hypertension, atrial fibrillation, and dyslipidaemia (ECOG performance status 1) was diagnosed with advanced EGFR-mutant non-small cell lung cancer (NSCLC) in January 2022. He was initially treated with first-generation EGFR tyrosine kinase inhibitors (TKIs), receiving gefitinib followed by erlotinib due to treatment-related hepatotoxicity, achieving a partial response. Disease progression subsequently occurred, plasma testing at that time detected an acquired EGFR T790M mutation, and osimertinib was initiated, resulting in a partial response with a progression-free survival of 12 months.

In September 2024, clinical and radiological disease progression was observed while on osimertinib. The case was reviewed at the lung MDT, where key discussion points included mechanisms of resistance to osimertinib, the role of repeat tissue biopsy, and appropriate subsequent systemic therapy in the context of limited targeted treatment options.

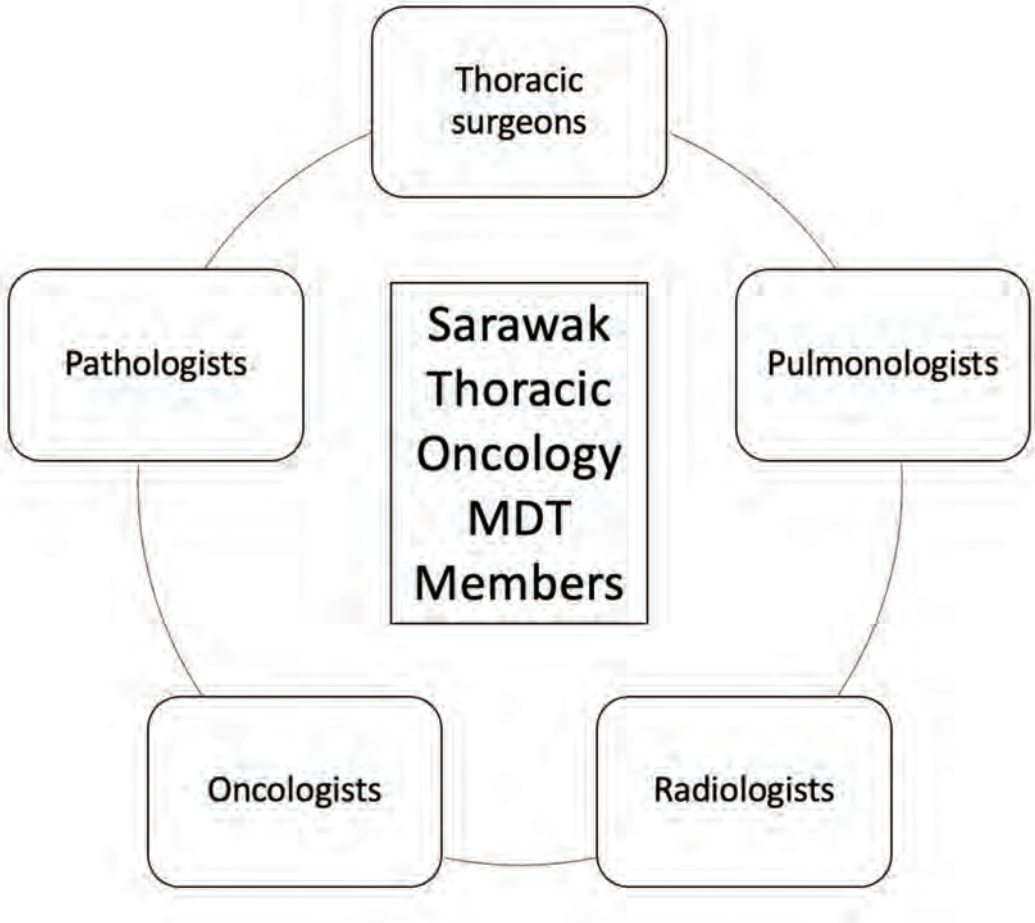

Fig. 1: Team members of our Thoracic Oncology MDT

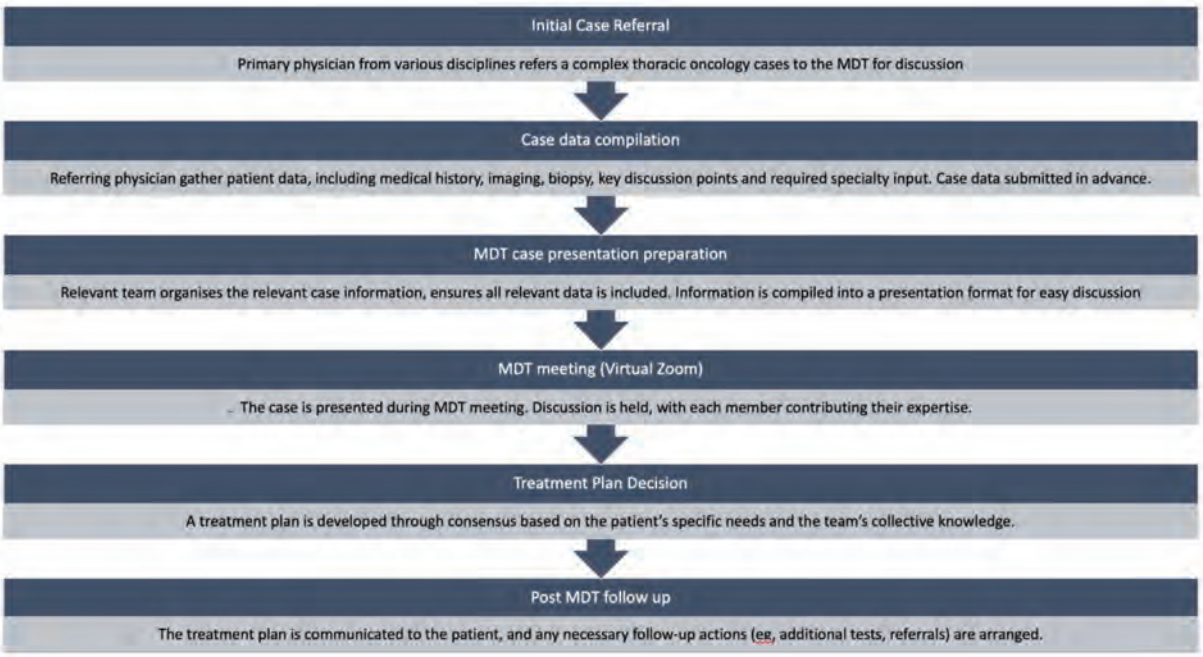

Fig. 2: Workflow of Case Presentations in Thoracic Oncology MDT. This diagram illustrates the process by which complex cases are selected and presented during our MDT meetings. It outlines the steps from initial case referral, the compilation of patient data by the involved team, the preparation for MDT discussion, and the final decision-making process that follows the case review. This workflow ensures that all relevant clinical information is considered and that treatment recommendations are made collaboratively by the multidisciplinary team

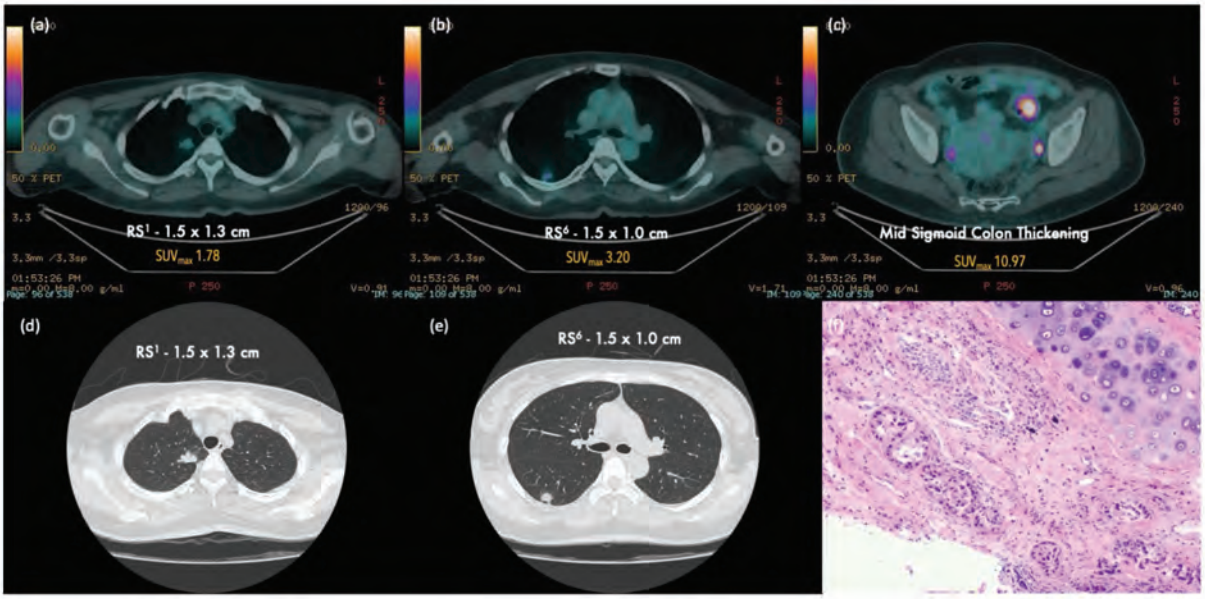

Fig. 3: (a),(b) FDG scan showing FDG-avid lung nodules, (c) FDG-avid sigmoid colon thickening. (d),(e) CT images showing both lung nodules, (f) histopathological examination revealed adenocarcinoma of lung origin

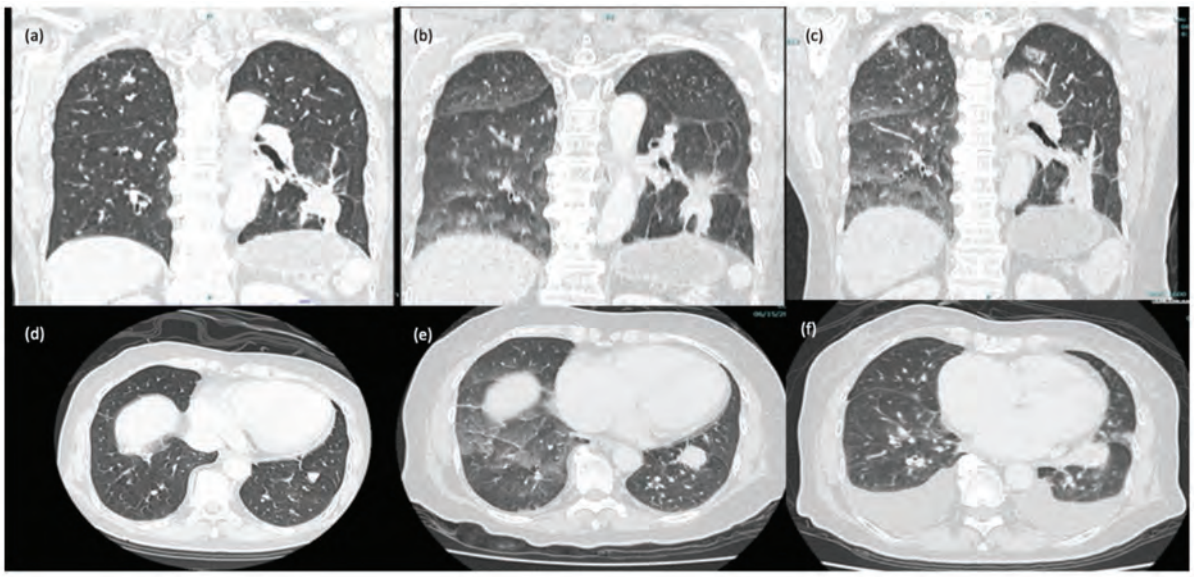

Fig. 4: (a),(d) CT images during first generation TKI treatment. (b),(e) CT images showing disease progression after first generation TKI. (c)(f) CT images showing larger lung nodule with presence of new pleural effusions, confirming disease progression while on osimertinib

Given the clinical scenario and disease progression, the MDT recommended repeat tissue biopsy to evaluate for histologic transformation or alternative resistance mechanisms. The biopsy approach was discussed as well, including lesion to biopsy and approaches.

An endobronchial ultrasound-guided biopsy of a progressing left lower lobe lung lesion revealed small cell carcinoma, consistent with histologic transformation. Due to small cell transformation, the patient was transitioned to platinum-etoposide chemotherapy. Unfortunately, his clinical course was complicated by pneumonia, and he subsequently passed away in December 2024. His overall survival from diagnosis was 47 months. This case illustrates the critical role of MDT discussion at the time of progression on osimertinib, particularly in guiding decisions regarding re-biopsy, identifying histologic transformation, and enabling timely modification of treatment strategy in advanced EGFR-mutant lung cancer.

DISCUSSION

MDT meetings, in which cancer patients are discussed by a group of specialists with the expertise relevant to their clinical management, are an integral part of modern cancer care.[14] It enables coordinated, evidence-based decision-making.[15] In a resource-limited setting, MDT implementation often faces additional logistical, workforce and

infrastructural barriers. In Sarawak, often limited by vast geography, uneven specialist distribution and limited tertiary oncology centers, establishing a functioning thoracic oncology MDT represents an important structural advance in cancer care delivery. This clinical audit describes our institutional experience developing a virtual MDT and highlights operational processes, early observation and lessons learned, rather than presenting outcome-based improvements which we were unable to measure in this retrospective review. Our study also highlights the feasibility and impact of a virtual MDT model in overcoming geographical barriers and optimizing patient outcomes.

Several studies have described how virtual MDTs overcome geographical barriers. In the United Kingdom, a virtual lung cancer MDT linking a district hospital in Southend results in 30% increase in surgical resection, reduced unnecessary investigations, and shortened the time to surgery appointments.[16] In Japan, a virtual lung cancer tumor board connecting eight hospitals reviewed 202 cases over 14 months, with the majority being lung cancer (96%). The primary focus of discussions was treatment strategy (92.6% of cases), while diagnostic strategies were addressed in 7.4% of cases. The virtual MDT meeting led to changes in treatment strategies for 49 out of 202 patients.[17] While international studies demonstrate measurable improvements, our audit focuses on how the MDT operated within local constraints, how case selection was tailored and how multidisciplinary engagement was coordinated across institutions. Our analysis of 94 patients from our MDT revealed that lung cancer constituted nearly half (48.9%) of the cases, followed by other solid organ cancers with lung lesions (26.6%), suspected lung cancer (12.8%), and non-malignant respiratory conditions (9.6%). This difference in distribution is likely due to targeted approach adopted by our team with deliberate focus on complex cases rather than all lung cancers. Similar to the Japanese study, therapeutic issues were more common reasons for MDT listings. In terms of MDT outcomes, 35.1% received surgical recommendation, 16% for surveillance and 13% for systemic therapy.

The main demonstrable benefits of our virtual MDT model is its ability to bridge geographical barriers by connecting clinicians across distant hospitals and compensate for limited local subspecialty availability. The virtual platform has enabled seamless participation from specialists across Malaysia, promoting equitable access to expert opinions regardless of a patient's location. This approach aligns with global efforts to enhance cancer care delivery through telemedicine and virtual MDT in resource limited settings.[18] Besides bridging geographical barriers for patients, virtual MDT has been shown to increase attendance of specialists and reduces the time and burden associated with travel.[8,19] In terms of quality of case discussion, study has found that virtual MDT may have better quality discussion despite comparable ease of reviewing pathology and radiology images, presentation and gathering subspecialty recommendation.[20] This is possibly due to better depth of discussion with personal face-to-face interaction. Other potential significant benefit of virtual MDT including fostering international collaboration to enhance access to expert care and facilitate sharing of expertise.[21] Although we were unable to demonstrate outcome improvement such as faster treatment timeline, enhanced staging accuracy or better survival, our MDT clearly improved coordination of care, reduced reliance on ad hoc consultations and standardized the management of complex thoracic oncology cases.

Our experience establishing a virtual thoracic oncology MDT in a resource-limited setting has also yielded several key lessons. Strong administrative support and structured coordination are essential to sustain regular meetings across institutions. While virtual platforms can effectively bridge geographic and resource gaps, reliable connectivity and standardized documentation remain critical to maintaining meeting quality and continuity. Every meeting should be periodic and fixed at preplanned time and every MDT member should have dedicated time to attend MDT meeting. MDT meeting should be held during core hours and should not clash with any related clinic. Early engagement of stakeholders, including peripheral hospitals, promotes shared ownership and consistent participation. Finally, the development of local data systems and training pathways is vital for ensuring accountability, sustaining multidisciplinary collaboration, and achieving long-term impact.

Despite its benefits, sustaining our virtual MDT presents several challenges. The absence of a uniform electronic medical record system, workforce limitations, the need for streamlined case selection, internet connectivity issues, and logistical constraints in organizing virtual meetings require ongoing optimization. Poor connections can lead to dropped calls, audio clarity issues, and overlapping conversations, all of which can undermine discussion quality and meeting effectiveness.[20,22-23] Additionally, the lack of face-to-face interaction, role uncertainties, and difficulties in engagement may contribute to a less effective virtual MDT.[24] While virtual platforms allow broader participation, maintaining engagement, securing commitment from all disciplines, and ensuring comprehensive case discussions remain key challenges.[19] Implementing well-defined protocols such as structured turn-taking, clear leadership roles, and dedicated MDT coordinators may help mitigate these issues.[23,25] Furthermore, continuous audits of MDT performance, proactive participation, strategic scheduling, and regular team dialogues play a crucial role in sustaining our virtual MDT and overcoming its barriers.[26]

MDT meetings enhance oncology care by reducing reliance on individual decisions and fostering collaborative teams and systems.[8] Effective MDTs have been associated with improved care processes, more accurate treatment recommendations and better survival outcomes.[27–29] Additional benefits include reduced lead times, stronger team dynamics, training opportunities for junior physicians, and better identification of patients for clinical trials.[28] Core features of an effective MDT include effective communication, strong leadership, patient-centered approach, and multidisciplinary collaboration built on mutual respect.[30-31] Regular audits by quality indicators (QI) instruments are essential for maintaining an efficient and high-quality MDT.[32] QIs provide measurable benchmark for

evaluating care quality, and several QIs specific to thoracic oncology MDTs have been developed to assess professional practice, decision-making quality and the patient's perspective.[33-34] Tools like MDT-Metric for the Observation of Decision-making (MDT-MODe) and patient-reported outcome measures can effectively assess the quality of MDT.[35] Although we were unable to apply these QIs due to retrospective data limitations, incorporating them in the future prospective studies will enable more systematic evaluation of MDT performance, adherence to recommendations and impact on patient quality of life.

Our study has several limitations. As a single-center, retrospective analysis, it is subject to selection bias. Only cases deemed complex by the primary team were included for MDT discussion, which may limit the generalizability of our findings to all thoracic oncology cases managed in Sarawak. Additionally, the descriptive nature of our analysis means that we are unable to provide objective evidence of the direct impact of the MDT on key clinical outcomes, such as pre-treatment evaluation, proper staging, adequacy of treatment, time-to-treatment, treatment adherence, or survival. Due to difficulties in systematically collecting outcome data, including long-term follow-up, we were unable to assess the real-world impact of MDT recommendations on these patient outcomes. Moreover, logistical challenges related to data collection, such as the absence of a uniform electronic medical record system and inconsistent follow-up procedures, hindered our ability to track patient outcomes like survival rates and treatment progression. As a result, the evaluation of MDT effectiveness remains limited to descriptive data rather than definitive evidence of improved patient outcomes.

To address current gaps, we plan to prospectively track MDT recommendations and patient outcomes. Each case will be assigned a standardized form capturing recommendation type, implementation date, adherence, and time-to-treatment interval. Survival and progression data will be linked to these records through routine six-monthly follow-up audits. This framework will enable objective assessment of MDT impact on adherence, timeliness, and patient outcomes. Future prospective studies should incorporate systematic tracking tools and robust data collection methods, such as electronic health records, to allow for more thorough evaluations of the MDT's impact on survival, disease progression, treatment adherence, and quality of life. Operational challenges including limited specialist availability and risk of burnout remain significant in Sarawak, highlighting the need for task-sharing, structured scheduling, and collaboration with regional or international experts. We do aim to strengthen MDT composition by integrating palliative care and rehabilitation teams, as early involvement improves quality of life and clinical outcomes.[36-37] Expanding specialist training opportunities will further enhance capacity and support continued advancement of multidisciplinary cancer care.

CONCLUSION

In conclusion, this clinical audit demonstrates the feasibility and process success of establishing a virtual thoracic oncology MDT in Sarawak, which has strengthened multidisciplinary collaboration, improved coordination, and enhanced access to expert opinions in a resource-limited environment. As a descriptive audit, clinical outcomes were not evaluated. Future efforts will focus on developing a prospective framework to monitor MDT adherence, treatment timelines, and survival outcomes, alongside integrating electronic health records to enable more comprehensive data collection. Addressing local barriers such as workforce limitations, infrastructure gaps, and healthcare inequities affecting rural and indigenous populations, will be crucial to realizing the full potential of virtual MDTs in improving cancer care delivery. Ultimately, this work represents an important foundation for sustainable, equitable, and collaborative cancer care in Sarawak and similar resource-limited regions.

CONFLICT OF INTEREST

The authors have no conflicts of interest.

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