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Technology applications in cancer treatment at the cancer center of Bai Chay Hospital, Quang Ninh

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Abstract--In order to improve the effectiveness of cancer treatment, over the past time, Quang Ninh-Bai Chay hospital has also focused on investing in specialized machinery such as: a system of emergency equipment, active resuscitation, imaging diagnostics, pathology, etc. testing, functional exploration - endoscopy, operating rooms...; including the most modern specialized equipment for diagnosis and treatment, worth tens of billions of dong, such as: 1.5 Tesla magnetic resonance imaging machine, 128-layer tomography, specialized chemical mixing cabinet. .. Besides, putting the Center for Radiation Oncology into use since November 2015 has also contributed to perfecting multimodality treatment, helping to prolong life for cancer patients. Objectives: To present related studies and research results and analysis of cancer treatment. Methods: A cross-sectional descriptive study using the FACT- Hep questionnaire. Results and conclusions: patients living quality at levels of no effect, little influence, much influence and great influence all accounted for 25%. People with many and many background diseases accounted for 26.3% and 33.3% higher than those without background diseases, the difference was $p>0.05$.

Keywords---quality of life, liver cancer, technology applications.

1. Introduction

According to statistics, the ratio of cancer patients in the world has been increasing. Also we recognize in Vietnam and in the world, doctors and nurses have applied many technologies in cancer treatment effectively.

And VT Binh, DTN Huy. (2021) suggests solutions for [Treatment of Patients at Hospitals in Vietnam](#) and supported by (PTB Ngoc et al, 2021; VT Binh, DTN Huy, 2021). Therefore, the quality of life of liver cancer patients is a health issue of increasing concern, in order to improve the quality of life for patients, we conduct a research on the topic: "Evaluating quality of living of liver cancer patients being treated at the cancer center of Bai Chay hospital, Quang Ninh province in 2019".

Laparoscopic hysterectomy in the treatment of benign diseases has been performed at many provincial hospitals in Quang Ninh. With the goal of applying modern techniques to improve the quality of cancer treatment, doctors of Oncology Center, Bai Chay Hospital have successfully implemented laparoscopic hysterectomy and pelvic lymph node dissection for cancer treatment. Uterine cancer. This is a high technique that few provincial hospitals can perform.

In particular, lymph node dissection to remove all metastatic nodes, preventing cancer recurrence in endometrial cancer surgery is very necessary. Through the magnified image of the camera in the laparoscopic system, the surgeon can observe the lymph node chain located below the peritoneum, along the left and right iliac vessels, easily detect and completely remove the metastatic lymph nodes. It is so small in size that it is difficult to see with the naked eye.

Research questions:

Question 1: What are related studies of cancer treatment?

Question 2: What are research results and analysis of cancer treatment?

Moreno et al (2021) pointed that Liver cancer is one of the main causes of death related to cancer worldwide; its etiology is related with infections by C or B hepatitis virus, alcohol consumption, smoking, obesity, nonalcoholic fatty liver disease, diabetes, and iron overload, among other causes. Several kinds of primary liver cancer occur, but we will focus on hepatocellular carcinoma (HCC). Numerous cellular signaling pathways are implicated in hepatocarcinogenesis, including YAP-HIPPO, Wnt- β -catenin, and nuclear factor- κ B (NF- κ B); these in turn are considered novel therapeutic targets.

Next we analyze related studies in below table:

Table 1- Summary of previous studies

Authors	Year	Content, results
Singal & Serag	2015	The main risk etiological factors for liver cancer are infections by C or B hepatitis virus, chronic alcohol consumption, and,

		in the last years, nonalcoholic fatty liver disease (NAFLD); however, smoking, obesity, diabetes, and iron overload have been factors implicated in the generation of this disease
Zhai & Sun	2013	Regarding this, the first-line therapy for advanced HCC is sorafenib; a multikinase inhibitor approved for liver cancer treatment; this drug has been demonstrated to provide a significant improvement in the overall survival but is unable to counteract the disease progression due to the development of resistance to antiproliferative therapies. Therefore, it is urgent to developing new molecules with pharmacological efficacy and safety
Nguyen Thi Minh Chinh, Pham Thi Bich Ngoc, Nguyen Minh Loi, Dinh Thi Thu Hang, Dinh Tran Ngoc Huy, Pham Van Tung	2021	Roles of nurses and nursing is important in supporting cancer patient treatment
Moreno et al	2021	Experimental models represent useful tools for studying the different stages of liver cancer and help to develop new pharmacologic treatments. Each model <i>in vivo</i> and <i>in vitro</i> has several characteristics and advantages to offer for the study of this disease. Finally, the main therapies approved for the treatment of HCC patients, first- and second-line therapies, are described in this review.
Chew et al	2021	Real-world management of

		patients with hepatocellular carcinoma (HCC) is crucially challenging in the current rapidly evolving clinical environment which includes the need for respecting patient preferences and autonomy. In this context, regional/national treatment guidelines nuanced to local demographics have increasing importance in guiding disease management.
Nguyen Trong Hung et al	2022	Patients self-assessed that the disease did not affect quality of life was 8.7%, and 4.8% of patients thought that life was greatly affected. Up to 50% of patients are affected much and much in the functional and symptomatic domains

(Source: author synthesis)

2. Subject and Methodology

2.1. Place, time, research object

- Research location: Oncology Center - Bai Chay Hospital - Quang Ninh province.
- Research subjects: Patients diagnosed with liver cancer are being treated at Cancer Center - Bai Chay Hospital - Quang Ninh province.
- Research period: from June 2019 to May 2020.

2.2. Research Methods

Study Design: A cross-sectional descriptive study.

3. Research Results

Bai Chay Hospital has successfully received microwave technology in the treatment of benign thyroid tumors and hepatocellular carcinoma. Hepatocytes and thyroid benign tumors in Quang Ninh", "Results of application of microwave technology to treat hepatocellular carcinoma and thyroid benign tumors at Bai Chay Hospital", "Process techniques for applying microwave technology to treat hepatocellular carcinoma and benign thyroid tumors at Bai Chay Hospital", "Some solutions to apply microwave technology to treat hepatocellular carcinoma" and benign thyroid tumors for some oncology departments in the province”...

Liver tumors, thyroid tumors now tend to increase rapidly in number of patients and tend to be younger in age. Therefore, the patient's need for high-quality, minimally

invasive treatment is increasingly being prioritized.

Burning thyroid benign tumors, liver malignancies by microwave technology is a modern and advanced minimally invasive treatment method following international trends with many outstanding advantages such as safety, accuracy, aesthetics and high efficiency. Patients do not have to suffer pain from major incisions, have a short recovery time (only about 24 hours after the intervention, they can resume normal activities), reduce complications and severe sequelae from major surgeries.

The success of this scientific mission is the foundation for Bai Chay Hospital to continue promoting the application of microwave technology to effectively treat benign thyroid tumors, hepatocellular carcinoma for people in the province and neighboring areas, supporting the transfer of microwave technology to medical facilities. Thereby improving the quality, reputation and brand of medical services in Quang Ninh province.

Figure 1 - Evaluation of the degree of impact on the overall quality of life of patients

Information		Not influence		Little influence		Much influence		Very much influence	
		SL	%	SL	%	SL	%	SL	%
Age group	≤ 60 tuổi	19	30,2	12	19,0	20	31,8	12	19,0
	>60 tuổi (n=41)	12	29,3	9	22,0	8	19,4	12	29,3
	P	>0,05							
Underlying disease	Yes (n=57)	12	21,1	12	21,1	18	31,6	15	26,2
	No (n=47)	19	40,5	9	19,1	10	21,3	9	19,1
	P	>0,05							

(Source: Hung, N.T et al, 2022)

Analysis:

We see from above figure that the highest ratio of 31,8% belong to patients age group ≤ 60 (with much influence)

And then, the lowest ratio of 19% is belong to patients age group ≤ 60 with little influence (or with very much influence).

Moreover, for age group > 60 years old, the highest ratio of 29,3% with not influence.

And then, the lowest ratio of 19,4% is belong to patients age group >60 with much influence.

4. Conclusion

After nearly 2 years of operation, the Oncology Center, Bai Chay Hospital, has gradually effectively exploited the facilities, equipment and invested human resources to provide quality medical services. quantity for the people in the province.

Cancer patients are being treated with bone scintigraphy at the Oncology Center, Bai Chay Hospital Oncology Center, Bai Chay Hospital, was built with a scale of 200 beds.

With the investment in modern accelerated radiation therapy machine, the doctors of the Oncology Center have quickly applied the dose-modulated radiation therapy (IMRT) technique in cancer treatment. The outstanding advantage of IMRT is that it can increase the dose at the tumor, so the ability to kill the tumor is faster, limiting the side effects of radiation therapy.

Along with that, scintigraphy is also effectively deployed by doctors and nurses with 3 high-tech techniques including bone scintigraphy, kidney scintigraphy, and upper thyroid scintigraphy on the SPECT system. This is one of the modern imaging equipment and the world's leading nuclear medicine technique for early detection of tumors, cancer, monitoring cancer recurrence, cancer metastasis. In particular, bone scintigraphy is a technique that has been mastered by the doctors and nurses of Bai Chay Hospital and applied regularly from August 2020 to present.

This method can detect bone metastases 3-6 months earlier than conventional imaging methods. Last but not least, The quality of life of patients at levels of no effect, little influence, much influence and great influence all accounted for 25%. People with many and many background diseases accounted for 26.3% and 33.3% higher than those without background diseases, the difference was $p > 0.05$.
Figure 2- Doctors practice at Bai Chay Hospital



(Source: author synthesis)

Research limitation

Authors can expand study for other markets

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Conflicts of interest

There is no conflict of interest

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