

Thyroid cancer in a long-term nonprogressor HIV-1 infection

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Abstract

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Long-term non-progressor HIV infection (LTNP-HIV) is seen in <1 percent of HIV-afflicted population. There are definite criteria for the diagnosis of LTNP-HIV. Malignancies either solid tumors or haematological cancers have not been reported in such population. We report here a rare case of follicular thyroid carcinoma in LTNP-HIV infection. She never had any opportunistic infections. She did not receive anti-retroviral therapy in the entire course of illness and continued to have good quality of life. Treatment of follicular thyroid cancer was similar to other patients without HIV infection. This could be the first case study from India.

Keywords: Follicular thyroid cancer, HIV-1, long-term nonprogressor HIV infection

INTRODUCTION

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Long-term nonprogressor HIV infection (LTNP-HIV) is seen in <1% HIV positive population. Natural history of this subset of patients is entirely different.[1] So far, there are no studies on cancers in LTNP-HIV patients in the literature. We report here a very rare case of follicular thyroid carcinoma in LTNP-HIV infection. This could be the first case report from India.

CASE REPORT

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A 30-year-old female, doctor by profession, presented with midline painless swelling in the neck for 3 months. It was slowly progressive but did not cause any pressure effects on nearby structures. She was having HIV-1 infection for last 10 years. She never had fever, weight loss, or any opportunistic infections due to HIV-1 infection. Details of investigations done 10 years ago such as HIV-1 viral load and CD4 and CD8 counts are not available at present. She was never treated with prophylactic drug treatment for opportunistic infections or with antiretroviral therapy during this period. She never suffered from thyroid illness before. None of her family members had history of thyroid dysfunction.

Clinical examination revealed a solitary nodule of 4 cm in the left lobe of thyroid. Cervical lymphadenopathy was not found. Ultrasonic study of thyroid gland showed an isoechoic solid nodule. Fine-needle aspiration cytology reported as a cellular follicular lesion. Thyroid function tests were normal. She underwent left hemithyroidectomy. Histopathological gross evaluation of left hemithyroidectomy specimen measuring 6.3 × 6.3 × 3.0 cm showed a well-circumscribed homogenous, nodular brownish mass measuring 4.5 × 3.5 × 2.8 cm. Adjacent nonneoplastic thyroid was nodular grey-white. Microscopy revealed a widely invasive, follicular carcinoma demonstrating prominent capsular and vascular invasion with tumor plug completely transgressing the fibrous capsule and present within a blood vessel covered by endothelium. No extra-thyroid extension was seen. Adjacent thyroid parenchyma shows lymphocytic thyroiditis [Figure 1]. There was no spread to other



Figure 1

Widely invasive follicular carcinoma of thyroid. Arrow shows capsular invasion. Inset shows adjacent Hashimoto's thyroiditis

Completion thyroidectomy was performed. Histopathological evaluation of completion thyroidectomy specimen showed Hashimoto's thyroiditis. Eleven adjacent lymph nodes were free of tumor. After 4 weeks, she underwent radioactive-Iodine whole body scan that demonstrated residual disease in the neck. Radioiodine ablation of the disease was done. She was treated with levothyroxine 100 µg daily for hypothyroidism after radioiodine treatment and calcium carbonate 1 Gm 3 times a day along with weekly cholecalciferol 60,000 IU for immediately for postoperative hypoparathyroidism. Her CD4 and CD8 counts were 756 cells/mm³ and 819 cells/mm³, respectively and the viral load was 136 copies/ml. Diagnosis of LTNP-HIV infection was considered as per the current criteria of LTNP-HIV.

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DISCUSSION

HIV-1 infection is common viral infection in India. There are subsets of HIV-1 infection in which the viral load is not very high, T cell subpopulations (helper/suppressor) cells are slightly reduced and patients can survive more than 8 years in the absence of antiretroviral therapy for HIV-1 infection. This subset is seen in only <1% of HIV-positive population. We considered LTNP-HIV infection rather than elite controller as the viral load was more than 100 HIV-RNA copies/ml and helper T cell count was stable over the past 10 years, in the absence of antiretroviral therapy in this case study. The diagnostic criteria of LTNP-HIV include: (i) Helper cell population (CD4 cells) more than 500 cells/mm³ (ii) viral load <1000 copies/ml (iii) stable disease over a period of 8 years without antiretroviral therapy for HIV infection. Prevalence of LTNP is <1% of HIV-positive patients in clinical practice.[1] Most of the patients are asymptomatic.

Incidence of cancers either AIDS-defining cancers (ADCs) or non-AIDS-defining cancers (NADCs) in LTNP-HIV infection has not been reported earlier. Prevalence of cervical lesions in LTNP-HIV patients was studied in Africa.[2] Thyroid involvement in HIV-positive patients may have variety of causes. It may be involved due to infections or there could be drug-related thyroid dysfunction in HIV infection,[3] but primary malignancy of thyroid in LTNP-HIV-1 patients is not known. Etiology of the NADCs and ADCs is not well understood. Most of the patients with AIDS-associated cancers have viral etiology. Human papillomavirus is responsible for oral and cervical cancers, Epstein-Barr virus is related to non-Hodgkin's lymphoma (NHL) and human herpes virus 8 for Kaposi's sarcoma (KS). No such viral etiology is attributed in the pathogenesis of thyroid malignancy.[4]

HIV/AIDS-related cancers, either AIDS-defining malignancies (ADMs) or non-ADMs (NADMs) are often seen in HIV infection with advanced stage. With highly active antiretroviral therapy, the prevalence of KS and NHL has declined significantly. Thyroid cancers in HIV/AIDS are an uncommon and unusual type of NADM. [5] Mbulaiteye *et al* reported rising incidence of cancers of thyroid, kidney, and uterus and of conjunctiva in HIV/AIDS in Africa.[6] Whether genetic factor(s) play any role in the pathogenesis of thyroid cancers in HIV-positive patients is not clear.[4] Papillary thyroid carcinoma[7] and medullary thyroid carcinoma[8] were reported in advanced HIV positive patients. They were receiving antiretroviral therapy for HIV infection unlike our patient.

Pathogenesis of LTNP-HIV infection is a mystery. Viral, genetic and host-related factors have been postulated in the development of LTNP-HIV infection. Patients with HIV-1 infection progress if they have abnormalities of nef gene or have high level of beta-2-microglobulin. While some genes protect against the progression.[1] CCR5 is a co-receptor for transmission of HIV-1 infection. Mutation of CCR5 gene is the most common abnormality in LTNP-HIV. Such mutation can be seen in Indian families as well.[9] Usually, individuals with homozygous delta 32 allele are resistant to HIV infection in spite of multiple exposures to HIV-infected persons while those with heterozygous delta 32 mutation have lesser viral replication and slower progression of HIV infection.[10] We have not evaluated our patient for molecular markers. Until date, patient has got good quality life following total thyroidectomy. How long will she remain LTNP-HIV or will she progress in future is not known.

Nil.

Conflicts of interest

There are no conflicts of interest.

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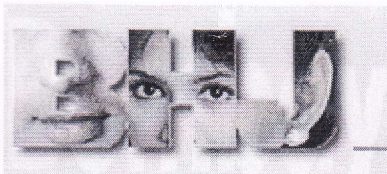


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Laparoscopic Surgery

Laparoscopic Surgery for Malignancy

PJ Shukla*, PV Chitale*, CS Ravichand*

Introduction and Background

Since the first report of laparoscopic cholecystectomy by Mouret in 1987 there is an upsurge of laparoscopic procedures for benign diseases such as laparoscopic cholecystectomy, Nissen's fundoplication, inguinal hernia repair and appendectomy.¹ The initial successful and wide spread application of laparoscopic technique in benign diseases resulted in maturity of surgical skill and confidence in laparoscopy among the surgeons. This subsequently made surgeons apply laparoscopic technique for resection of malignant diseases.

Technological advances took rapid strides in last 20 years. With refinement in instrumentation and availability of newer energy sources laparoscopic resections in malignancy have become more successful and with fewer complications.

The main advantage of laparoscopic surgery over an open procedure is that it requires smaller incision, which translates into less pain, less pain medication, better cosmesis, earlier ambulation and quicker recovery.

Role of Laparoscopy in Malignancy

Laparoscopy is used in cases of malignancy as - diagnostic and staging procedure, therapeutic procedure, palliative procedure.

Laparoscopy is used either as

- 1) complete laparoscopy or as
- 2) hand assisted laparoscopy

Laparoscopy in Diagnosis and Staging of Malignancy

Despite the advances in imaging technology, conventional imaging techniques have been found to be inadequate in diagnosing and staging the disease in oncology.

Most important benefit of laparoscopy is to diagnose advanced disease without subjecting the patient to major exploration, associated pain and longer hospitalization. A non-therapeutic laparotomy adds cost, creates patient discomfort and delays alternative therapy till healing occurs. This is especially true in cases of peritoneal carcinomatosis which is easily missed on imaging. Ability of laparoscope of viewing deep and intricate structures, facility of laparoscopic biopsy and laparoscopic aided imaging (as laparoscopic ultrasound, doppler) is helpful in diagnosis and staging of retroperitoneal adenopathy, pancreatic tumours, adnexal masses, mesenteric tumours and the occult diseases in abdomen.

Ca Esophagus

Presence of distant nodal metastases and carcinomatosis contradicates the oesophageal resection. Non invasive imaging is found to overstage the disease in considerable proportion of patients, bereaving them of the curative resection. Thoraco-laparoscopy offers facility of accurate staging of lymph nodal disease by lymph node biopsy.

Gastric Cancer

The dismal prognosis associated with gastric cancer makes it essential to select the early cases in which a curative resection can be offered. Laparoscopy aids in the staging of gastric cancer by detecting peritoneal

nodules, gastric serosal infiltration, adherence to adjacent structures, presence of lymph node metastases, presence of liver metastases, ascites and cytological evaluation of peritoneal washings.² The laparoscopic staging accuracy in gastric cancer is about 90% and laparoscopy has been found to predict resectability in 87% of cases.

Hepato-Biliary and Pancreatic Tumours

Laparoscopic staging of liver tumours (primary and secondary) has low yield as compared to imaging. But Laparoscopic ultrasound (LUS) may prove to be helpful in deciding resectability of hepatic tumours.³ Laparoscopy is most accurate for identifying peritoneal disease and additional hepatic disease thereby preventing non therapeutic laparotomies. However, metastatic lesions below the capsule of liver and tumour invasion of the retroperitoneum and portal vein are the main considerations when determining local resectability. Laparoscopy combined with LUS is more specific in defining local resectability of pancreatic tumour.⁴

Laparoscopy in Treatment of Malignancy

Cancer surgery poses some unique challenges for the application of laparoscopy in oncology – a) relationship of a tumour to the tissues that surround it is critically important in cancer staging, specimens or whole organs should be removed intact (en bloc) so that the pathologists can properly examine them and measure and document the depths and margins of tumour invasion and resection, b) lack of evidence of improving outcomes of resections such as decreased hospital stay, decreased pain, early recovery, decreased costs, and earlier returns to work and c) any negative impact on survival e.g. induction of carcinomatosis, port site recurrences.

Oesophageal Cancer

During standard oesophageal resections, mobilization of oesophagus with mediastinal dissection is done thoracoscopically and gastric mobilization and resection is done laparoscopically. Avoidance of thoracotomy is thought to result in less pain and reduced respiratory complications

Gastric Cancer

Minimally invasive procedures include gastrectomy via laparoscopy and hand-assisted resections. Laparoscopic D1 gastrectomy seems ideal for early gastric cancer. A total D2 gastrectomy is advisable for middle- third and upper third lesions, but distal gastrectomy is sufficient for antral lesions.

Laparoscopic gastric resections are – a) Laparoscopic partial or total gastrectomy with internal reconstruction of upper GI tract b) Assisted laparoscopic partial or total gastrectomy – reconstruction is through minilaparotomy.

Pancreatic and Hepatobiliary Cancer

Pancreaticoduodenectomy, distal pancreatectomies, and liver resections are reported to be done laparoscopically. For liver malignancies, laparoscopic radiofrequency ablation and cryoablation under laparoscopic ultrasound guidance allow detection and treatment of small metastases.

Colorectal Cancer

All types of colonic and colorectal resection as anterior resection, abdominoperineal resection and total mesorectal excision are done laparoscopically. The laparoscopic procedure does not deviate from the steps of the traditional radical excision as it also includes high ligation of the vessels, adequate length of the distal margin from tumour, adequate lymphadenectomy and mesorectal excision. The resection margins and lymph node yield is not lower in laparoscopic procedure.⁵ The results of clinical outcome of surgical therapy (COST) trial suggest that laparoscopically assisted colectomies are equivalent to open colectomies in terms of recurrence and overall survival and have advantage of faster perioperative recovery.⁶

Laparoscopy in Palliation of Malignancy

Palliative procedures which are done laparoscopically are Gastro-Jejunostomy, Intestinal Bypass, Colostomy, Ileostomy, Feeding Jejunostomy / Gastrostomy.

Complications

Case selection is most important to reduce number of complications and conversion rate.

Injury to Adjacent Structures

In cancer patient infiltration of important structures by tumours makes such structures more susceptible for injury.

Port Site Herniation

Despite poor nutritional status and hypoalbuminaemia, the postoperative herniation through trocar site is not frequent in cancer patients. Closure of fascia at port site when it is of size more than 0.5 cm ensures this.

Complications related to the Learning curve

Laparoscopy is more than a new technique; it is a completely different way of operating. The visualization is different, the instruments are different, and the tactile aspects are very different. Intracorporeal suturing, for example, is a skill that requires a great deal of practice.

Port Site Recurrence

Port site metastasis (PSM) is recurrence of tumour at small wounds created for placement of ports during laparoscopy. The initial reported incidence of such recurrence ranged from 0 to 21%. Improved understanding of the mechanism of port site recurrences has prompted the surgeons to take appropriate precautions as e.g. use of plastic retrieval bag and use of non-touch technique during delivery of the specimen. This has reduced the incidence of port site recurrences to as low as less than 1%.

Conclusion

Over the past two decades laparoscopy has emerged as a valuable tool in the diagnosis and management of malignancy. The evolution of technology at hectic pace continues to confound the surgeon as we peruse the literature. There is no doubt that technological feasibility of executing major oncological procedures by laparoscopy has been established. Although long term oncologic safety is yet to be established in all laparoscopic procedures, short term outcomes are favourable and the issue of 'port site' recurrence seems to be waning.

Possible causes of tumour cell dissemination in laparoscopic surgery for cancer

Possible Cause	Intervention to Potentially Minimize This Cause
Aerosolization of cancer cells by sudden loss of pneumoperitoneum "Chimney Effect"	Controlled release of pneumoperitoneum
Tumour spillage from manipulation and instrumentation	Avoid excessive manipulation of tumour; limiting the instruments inserted
Tumour spillage at extraction site	Use protected tumour extraction (plastic bag) No touch technique
Immunosuppressive effect of pneumoperitoneum	Irrigate the abdomen with tumoricidal solution

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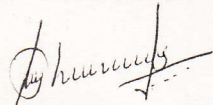
This is to certify that Dr. Priyadarshan V. Chitale has worked in the organization as **LECTURER (SURGERY)** from 10.07.2001 to 31.05.2002.

He has resigned from the services of the Hospital on his own accord and accordingly he was relieved from the services on 31.05.2002, on the closing hours of the Office.

During the above period his conduct was found to be good.

We wish him all the best in his future endeavors.

For JEHANGIR HOSPITAL & MEDICAL CENTRE



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