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**CASE STUDY: ADVANCED PROSTATE ADENOCARCINOMA MANAGEMENT USING  
HORMONE BLOCKADE AND INTEGRATED HEALTH CLINIC APPROACH**

**Introduction:**

Prostate carcinoma is the second most common cause of death in men<sup>1</sup>. The incidence of prostate cancer is increasing and is now the most common male cancer in the Western world. Cure is possible if the disease is radically treated in its early stages, but no curative therapy exists in the advanced stages when hormonal escape inevitably occurs and the best palliation possible<sup>2</sup>. The gold standard in the management of localized prostate carcinoma is prostatectomy and radiotherapy, but in widespread metastatic disease, radiotherapy is preferred to surgery<sup>3</sup>. However, radiotherapy is not without toxicity and long-term side effects. Patients refuse this treatment option mainly for this reason. In this report, we present a case of advanced prostate adenocarcinoma treated at Integrated Health Clinic (IHC), using both local and whole body hyperthermia in conjunction with disease-specific dietary, supplementary, injection and intravenous therapies. The addition of hyperthermia to radiotherapy may improve 5-year disease-free survival rate for patients with high-risk or very high-risk prostate cancer<sup>4</sup>. The use of hyperthermia for the treatment of cancer has been well documented. Heat mechanism stimulates the immune system of the body and acts on the unique morphology of cancer cells<sup>5,6</sup>.

**Case history:**

R.P., a 61 year-old male who has been diagnosed with adenocarcinoma of the prostate, stage IV. RP initially presented with low back pain and nocturia, which prompted further work-up. A prostate biopsy from December 28, 2012, revealed the presence of carcinoma with perineural invasion and Gleason grade of 4+3. In January 2013, a CT of the abdomen and pelvis revealed extensive osteoblastic bony metastases with retroperitoneal, right iliac, and right inguinal lymphadenopathy. RP had not received radiotherapy or chemotherapy for management, but was started on Zoladex injection and oral Bicalutamide. He sought naturopathic consult in January 2013, and was recommended naturopathic interventions (Table 1.).

**Table 1. – Recommended Naturopathic Treatment Protocol**

<b>Medication</b>	<b>Dosage</b>	<b>Effect</b>
<b>Prescriptions</b>		
Bicalutamide	50 mg tablet p.o. OD	Intermittent low dose androgen deprivation. Inhibits androgen stimulated gene expression and cell growth, leading to tumor cell apoptosis <sup>7</sup> . Improve survival in locally advanced disease <sup>8</sup> .
Finasteride	5 mg tablet p.o. OD	Type II and type III 5 alpha-reductase inhibitor <sup>9</sup> . Androgen receptor antagonistic effect <sup>10</sup>
Celebrex	100 mg capsule p.o. OD	Inhibit cyclooxygenase-2 (Cox2) enzymes. Blocking Cox 2 has been shown to decrease tumor invasiveness <sup>11</sup> . Induce apoptosis and inhibit angiogenesis of tumor cells <sup>12</sup>
Metformin	250 mg tablet p.o. BID	Inhibits androgen-induced IGF-IR up-regulation and IGF-I mediated biological effects in prostate cancer cells. Inhibits membrane-initiated androgen effects <sup>13</sup> . Decrease insulin resistance (promotes cancer cell growth) and reduces insulin level. Direct inhibitory effect on cancer cell growth and antitumoral action <sup>14</sup>
IVDCA protocol:	1. IV Dichloroacetate	Trigger apoptosis in cancer cells by reducing mitochondrial membrane potential, blocking aerobic

		glycolysis (Warburg effect) and activating mitochondrial potassium-ion channels <sup>15</sup> . Inhibits pyruvate dehydrogenase thereby inhibiting glycolysis. Causes favoring of aerobic respiration, which reverses the suppression of apoptotic pathways. Increased tumor apoptosis shrinks tumor size <sup>16</sup>
IV Ascorbic acid	2. IV Ascorbic Acid	Improve quality of life, decrease tumor size and prolong relapse interval <sup>17</sup> . Alleviates cancer and chemotherapy related symptoms <sup>18</sup>
IV Alpha lipoic acid	3. IV Alpha-Lipoic Acid	Induce apoptosis in cancer cells. Stabilize NF-κB transcription factor <sup>19</sup> . Inhibit aerobic glycolysis <sup>20</sup>
<b>Supplements</b>		
Vitamin D3	10,000 I.U. p.o. OD	Increased circulating levels of vitamin D are associated with reduced occurrence and a reduced mortality in different histological types of cancer, including those resident in the skin, prostate, breast, colon, ovary, kidney, and bladder <sup>21</sup> . Maintenance of normal differentiation, enhancement of apoptosis, and prevention of tumor angiogenesis <sup>22</sup>
Can-Arrest (Boswellia 200mg, Curcumin 200mg, Quercetin 100mg)	2 capsules p.o. BID	Inhibit cyclooxygenase-2 (COX2) enzymes. Blocking COX 2 has been shown to decrease tumor

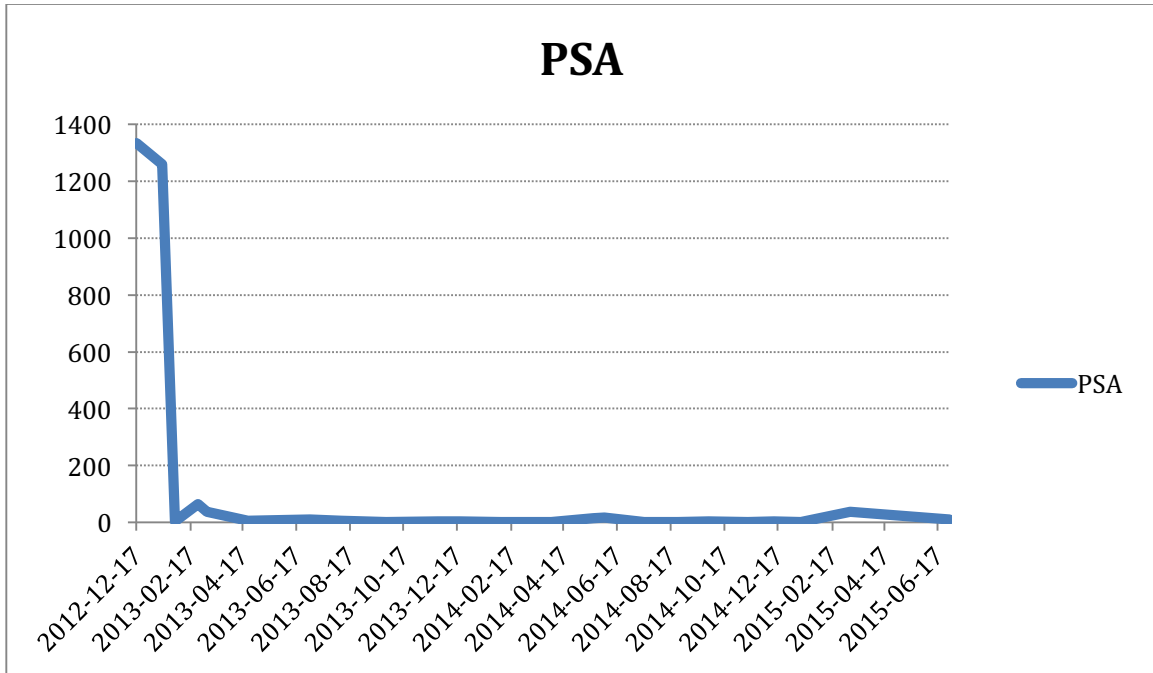
		invasiveness <sup>23</sup> . Inhibition of the transcription factor NF-κB to arrest tumor growth and its progression <sup>24</sup> .
EGCG (green tea extract)	2 capsules p.o. BID	Chemopreventive effect for prostate cancer cells <sup>25</sup> . Immunomodulator and pro-inflammatory mediator production <sup>26</sup> .
Pectasol (whey germ extract)	3 scoops p.o. OD	Bind to galectins on cancer cell surface interfering with cancer cell metastatic target site interaction <sup>27</sup> . Immunostimulatory. Activation of functional T-cytotoxic cells, B-cell and NK cells <sup>28</sup>
Melatonin	20 mg p.o. at bedtime	Immunomodulatory. Augment production of T-lymphocytes and NK cells. Oncostatic properties in melanomas and tumors of epithelial origin <sup>29</sup> . Multi-disciplinary anti-cancer action reduces toxicity after chemotherapy, radiotherapy, immunohormonal therapy and cancer surgery. Adjuvant therapy for cancer <sup>30</sup>

He was recommended loco-regional hyperthermia (LRHT) to the pelvis and abdomen 3x/week for 3 weeks accompanied by IV DCA protocol 2x/week, and fever-range whole body hyperthermia (FR-WBHT). PSA monitoring together with ALP and ALT was done as part of his disease surveillance. Testosterone level and blood work consisting of CBC and Blood chemistry was requested on a regular basis.

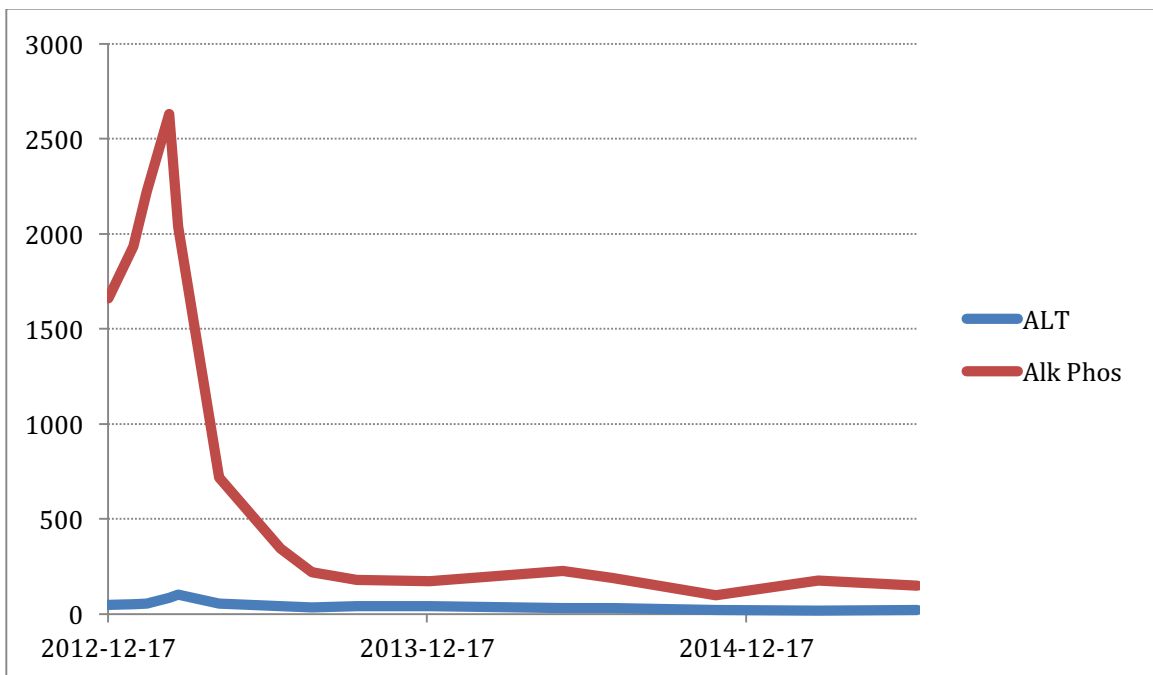
RP began LRHT to the pelvis and abdomen and IVAA infusions on April 2, 2013, which he tolerated well and without side effects. As of April 17, 2015, RP received 34 treatments to the abdomen and 39 treatments to the pelvis. Since beginning the recommended naturopathic interventions and LRHT, PSA levels decreased from 1259ug/L in January 2013 to 6.92ug/L in April 2013. He underwent 10 treatments

of fever-range whole body hyperthermia beginning in April 2013 until April 2015. A considerable drop in PSA as well as ALP levels occurred since starting the fever-range whole body hyperthermia (Figure 1 & 2.)

**Figure 1. - PSA lab test results**

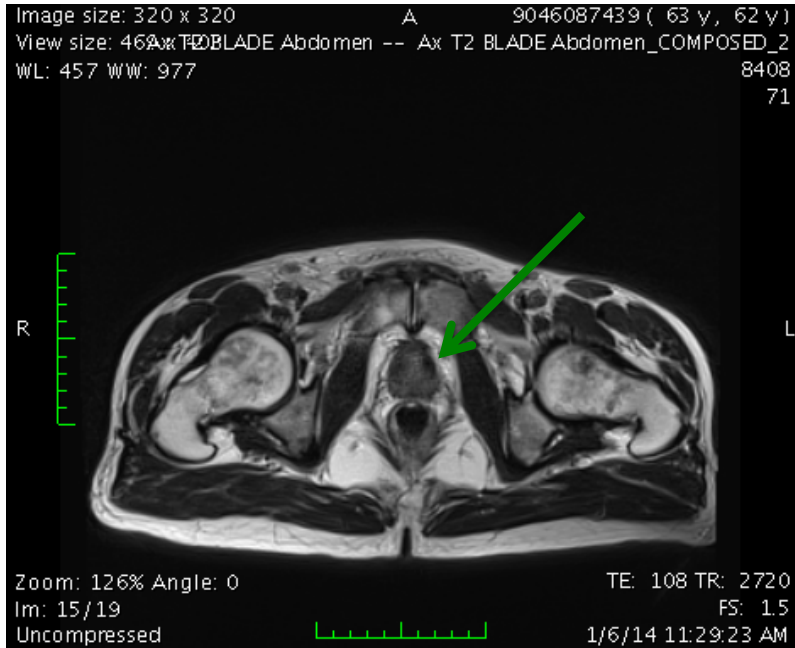


**Figure 2. - ALP & ALT lab results**

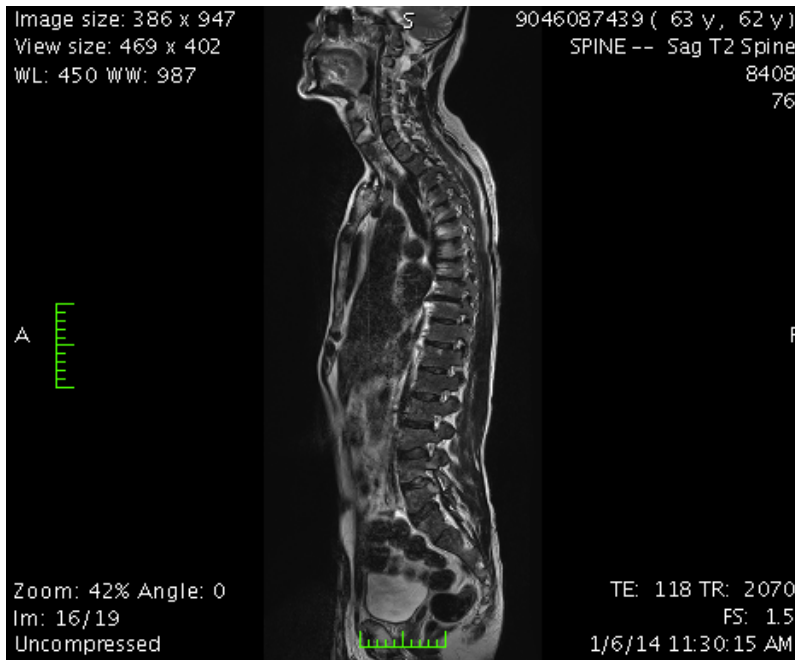


Whole body MRI completed in January 2014, revealed stable metastatic disease and no visible intrathoracic or intra-abdominal/pelvic metastatic disease (Figure 3 & 4).

**Figure 3. Whole Body MRI January 2014- Abdomen**



**Figure 4. Whole Body MRI January 2014**



RP continuous to receive Zoladex injections and oral Bicalutamide (50 mg QD). The results of PSA, ALP and ALT show a picture consistent with stable disease. PSA was at 1334.9 in December 2012 prior to consultation, and on January 2013, levels decreased to 2.5 and remained stable. On further follow-up, his symptoms improved as well as his quality of life. His DCA was shifted to oral intake at 500mg BID 5 days on, 2 days off and he continuous to take the recommended naturopathic interventions. Judging from the imaging, laboratory results, and his signs and symptoms, his clinical course from the start of the treatment at IHC shows that there is no remaining evidence of disease, and that it has not progressed to any new sites.

## **Discussion:**

The increased incidence of prostate cancer is attributable to early detection programs. Androgen dependence, previous inflammatory reactions of the prostate and a Western lifestyle are recognized important factors that contribute to carcinogenesis<sup>1</sup>. As stated earlier, several treatment options are available for prostate cancer. In widely metastatic disease, radiation therapy seems to be the best option but with potential deleterious effects. LHRH agonist and androgen blockers may not have the same effectiveness in treatment. It is necessary to offer the best traditional treatment and add hyperthermia for obtaining amelioration. Hyperthermia can positively increase quality of life, decrease biochemical recurrence and increase overall survival<sup>1</sup>. In an overview of methods for drug delivery to tumors, research shows that reduction of tumor interstitial flow pressure (TIFP) was temperature and time dependent. The reduction of TIFP was associated with an increase in perfusion and a sustained reduction of hypoxia, which led to an improvement in antitumoral effects when associated with chemotherapy and radiotherapy<sup>31</sup>. When cancer cells are subjected to high temperatures (40-43° C), they suffer irreversible damage, in a time and dose dependent way<sup>32</sup>. Hyperthermia relies on the unique characteristics of malignant cells, and acts on these mechanisms to inhibit its growth. Compared to healthy tissue, malignant cells are more sensitive to high temperature. Tumor cell architecture and vasculature is more chaotic compared to healthy tissue, and this leads to an immature, structurally defective microvascular system that is less resilient to perfusion shifts. The morphology, membrane fluidity and gene expression of a cancer cell also differs from normal cells. The heat increases membrane fluidity and instability of cancer cells, leading to cell death directly or indirectly through increased delivery of cytostatic chemotherapy agents. Heat induces expression of p53, a tumor suppressor transcription factor that is mutated or decreased in cancer cells. Hyperthermia also induces protective anti-tumor immune response by presenting the tumor peptides to naïve T-cells in the draining lymph nodes. The lymphocytes will mature and proliferate into cytotoxic T lymphocytes and CD4+ helper cells, mounting an adaptive immune response against tumor cells<sup>6</sup>. Elevated temperatures influence lymphocyte transformation and mitogenesis, both of which increase the activity of the immune system. The systemic

activation of the immune system by hyperthermia may help target metastatic tumour cells<sup>33</sup>. Despite the use of Zoladex and Bicalutamide, RP remained to have an elevated PSA. The PSA, ALP and ALT levels decreased after the addition of LRHT and whole body hyperthermia to the treatment regimen. MRI results support this outcome and show stable disease compared to earlier imaging. RP clinically showed the benefits hyperthermia with improvement of symptoms. This case report shows the safety and efficacy of integrative oncology treatment for advanced prostate carcinoma. The long-term progress of the patient clearly shows the benefit of hyperthermia whether or not it is used in conjunction with conventional therapy.

### **Conclusion:**

This case report shows that integrative oncology treatment is safe and effective for the management of advanced prostate adenocarcinoma in the particular patient. The use of naturopathic treatment played an important role for the patient's wellness and quality of life. Hyperthermia in combination with GnRH agonist, antiandrogen and targeted supplementation has shown to be effective in the management of advanced prostate adenocarcinoma with more manageable side effects.

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