

## **Patrick Sandes' Summary of Part II of Wendy Gillis' Presentation to the Toronto Carcinoid-Nets Local Support Group on Sunday October 22 2006**

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### **Recap from Part 1**

*First, a word about Wendy Gillis. She's a Nurse Practitioner and works closely with Drs Kocha and Reid at the London Regional Cancer Centre (LRCC). But that brief line barely encompasses what Wendy represents to anyone who has been to London for treatment. She is a truly willing, articulate, and caring source of authoritative information and guidance for patients; she always seems ready to help no matter how busy she is. Setting the unquestioned expertise of Dr Walter Kocha, Dr. Robert H Reid and, now, Dr. Michael Sanatini aside, Wendy is, for many, a big reason why the LRCC has become such a source of hope and comfort in dealing with neuroendocrine tumours and the resultant carcinoid syndrome.*

**Wendy's presentation was in two parts. The first part encompassed a review of neuroendocrine tumours (NETS), the hormones produced by different kinds of tumours, and the symptoms associated with those hormones; the second part described the various programs used by the LRCC to manage the different NETS.**

### **Part 2 of 2: Wendy Gillis' Presentation**

Summarized by Patrick Sandes

The second part of Wendy's excellent presentation focused on how the team at LRCC approaches treatment of NETs and Carcinoid Syndrome. Since each patient presents unique challenges, there is no "one size fits all" response. Much depends on:

- \* the size and location of the tumours
- \* whether the tumours can be surgically removed
- \* how "avid" the tumours are for the radioisotopes
- \* other factors relating to the overall health of the patient

Wendy told us that there is now a multidisciplinary "tumour team" that, in addition to the physicians listed in Part 1, includes surgeons, hepatologists and other specialists. They meet to review specific cases, look at scans of tumours, and discuss ways of managing them. She commented that London Regional Cancer Centre is getting "braver" when it comes to doing liver resections, largely due the surgeon, Dr. Doug Quan, and other members of the tumour team and the additional expertise they bring to specific cases.

Debulking tumours through resection and/or ablation (where the tumour is burned away by passing an electric current through it) is a key consideration since, in neuroendocrine tumours, the benefits of debulking are more significant than with other tumours. But in making these decisions, the tumour team has to weigh the risks of damaging the liver sheath (which, unlike the liver itself, does not regenerate as quickly); another consideration for ablation is the proximity of the tumours to blood vessels since these vessels tend to cool the tumours down too fast for ablation to occur.

LRCC's treatment protocol most frequently evolves in one of two ways:

- \* Hepatic Arterial Lipiodol Chemo Embolization (HALCE)
- \* Extended treatment using radioisotopes and chemotherapy in combination

### THE HALCE PROCEDURE

Here's a brief elucidation of the key HALCE words:

- \* "Hepatic" - relating to the liver
- \* "Arterial" - refers to the pathway, beginning with the femoral artery, the doctors use to reach the liver
- \* "Lipiodol" - refers to I-131-Lipiodol, wherein a radioactive isotope, Iodine-131, is linked to an innocuous substance, lipiodol, that is readily taken up by neuroendocrine tumours in the liver
- \* "Chemo" - refers to various chemotherapeutic compounds that are delivered to the tumours with the I-131-Lipiodol
- \* "Embolization" - refers to the deliberate clogging of small blood vessels and blocking the flow of blood to the tumours

In her elaboration of the HALCE procedure, Wendy put up a slide illustrating the human abdomen and mapping the route the surgeon takes so that the Lipiodol-Chemo bolus can be delivered to exactly where it will do the most good. At this point, Wendy went through the careful work that has to be done to ensure that the patient is "right" for the HALCE procedure. Two primary factors need to be considered:

- \* Is the patient a "secretor?" That is, do his/her tumours secrete hormones/peptides to such a degree that it will complicate the procedure? Heavy secretors cannot receive the HALCE procedure because the flow of hormones/peptides is too difficult to control.
- \* Does the patient's arterial system provide a clear and direct pathway to the tumour site? It's not unusual for patients to have obstructions and other factors that will make it impossible for the surgeon to reach the tumour site.

Wendy also stressed that the HALCE procedure is for those patients whose disease is mainly in the liver. Tumours elsewhere in the body will not be affected by the procedure.

In the HALCE procedure, a radiologist uses a special x-ray to look at the arteries in the liver. A flexible tube (catheter) is inserted into the large artery in the groin, usually the right side. This catheter is slowly moved into the hepatic artery and the arteries leading to the tumour(s). This can take 30 to 60 minutes. When the catheter is in the correct position, the nuclear medicine physician injects a mixture containing lipiodol and chemotherapeutic agents. The mixture amounts to 20ccs of fluid; a special plug is positioned just behind the mixture to keep it in place. After the injection, the catheter is removed and pressure is applied to the puncture site in the groin to prevent bleeding.

Patients deemed appropriate for the procedure are admitted to the LRCC the day before and blood tests are done. A nurse completes a history and reviews the medications the patient is taking. Whether the patient is taking daily Sandostatin injections or the LAR formulation is a vital piece of information at this stage. In the evening, an IV is started and continued overnight to ensure that patient has optimal fluid intake. The patient may drink fluids but receives no solid food after midnight.

On the morning of the procedure an IV with Sandostatin may be started to prevent or minimize carcinoid symptoms during the embolization procedure. A catheter is inserted into the bladder to ensure that the patient remains completely still throughout the procedure. A second IV is inserted to deliver the pain medication used during and after the procedure. And, finally, antibiotic treatment is initiated and continued for four days following the embolization to prevent infection.

During the procedure itself, the patient is required to lie very still. Leads are taped to his/her chest to monitor heart activity and a blood pressure cuff is put in place. Every patient's experience is different: some feel pressure or discomfort in their abdomens, especially in the area of the liver during the injection of the mixture, while others do not.

After the procedure, the patient is taken to the Recovery Room, where the puncture site, pulse, blood pressure and general condition are monitored. After two hours, all being well, the patient is taken back to his/her room, where he/she must remain flat in bed, with no leg bending, for six hours. Over the next few days, there may be tenderness in the abdomen caused by the expected swelling of the liver. Patients are shown how -- and encouraged -- to use the button on their pain medication pump to control pain.

A few patients feel the urge to vomit, either during the procedure or in the days following, but most do not. Some experience an increase in carcinoid symptoms, especially flushing. Their Sandostatin may be increased for a few days to manage these symptoms; most people resume their usual dose before they go home or shortly after. Other side effects, noticed by some people, include: pain in the abdomen, constipation, fever, sweats, chills, fatigue, lack of appetite, and hiccups. Many people have none of

these symptoms, but when they do occur, they are managed by adjusting medication in hospital and at home.

The usual stay is six days. Daily blood tests monitor liver function and once these tests indicate a recovery, the patient is allowed to go home. Those who are still troubled by side effects are prescribed the appropriate medication. Weekly blood tests are required for the eight weeks following the procedure; these can be done wherever the patient lives. To further monitor the patient's response to therapy, a variety of tests may be done:

- \* CT scans at 8-to-10 weeks
- \* 24-hour urine tests to assess 5-HIAA
- \* Blood work to measure Chromogranin-A
- \* Patient reports on clinical benefit (symptom reduction)

Wendy explained that it takes up to two months after the HALCE procedure for the full effects to be felt. The "full effect" is primarily seen as a reduction in symptoms, which is typically a result of arrested tumour growth or even shrinkage.

The HALCE procedure can be done a maximum of six times, that is, three times for each lobe of the liver. It derives its effectiveness from the radioactive isotopes that target the tumour cells and prevent the tumour cells from reproducing; the isotopes do not damage healthy cells.

#### EXTENDED RADIOISOTOPE/CHEMOTHERAPY PROGRAM

Those patients who cannot have the HALCE procedure are candidates for LRCC's extended radioisotope and chemotherapy program. This treatment delivers basically the same results as HALCE, but is spread over 24 weeks. Here's a snapshot of the process:

Every six weeks, patients receive Indium-111 Octreotide or Iodine-131 MIBG (these are alternated). They also receive three chemotherapeutic agents (carboplatin, epirubicin, and fluororacil or 5-FU). In the case of Indium-111, the patient is typically admitted on Monday and discharged on Wednesday, once the radioactivity of the octreotide is low enough. In the case of the MIBG, the patient is admitted on Thursday and discharged the following Monday, again depending on whether his/her radioactivity has fallen below safe levels.

The 5-FU pump is administered through a PICC line (a slender tube inserted in the crook of the elbow and fed to the superior vena cava just before it enters the heart) and delivers chemotherapy 24 hours a day. Patients keep the pump, getting their PICC lines maintained and a new bag of 5-FU every week at their local cancer center when they're not in London for

infusions involving radioisotopes. This continues through the first 18 weeks of the program unless the patient's blood counts or other factors make it necessary to suspend treatment for a while.

Every three weeks the patient receives carboplatin and epirubicin infusions in addition to continued 5-FU therapy; between visits to London for radioisotope treatments, patients' receive their chemo at their local cancer center. All infusions are administered through the PICC line.

In light of the impact of the chemotherapy on some patients, the team in London is rethinking the amount of chemo given in the extended program. New patients are only receiving chemo when they go to London for radioisotopes and not in between. This will make the overall program safer and much easier to tolerate.