Materials and Methods: Cancer patients receiving chemotherapy in clinical practice were identified from the HealthCore Integrated Research Database®, a geographically diverse, fully adjudicated longitudinal claims database covering 13 health plans and more than 20 million US lives. Enrollment data, medical (hospital and outpatient) and prescription claims, and mortality (confirmed using the National Death Index) were examined for eligible patients from January 2001 – December 2006. FN patients were propensity score-matched (1:1) within each tumor type of interest (Non-Hodgkins Lymphoma, breast, lung, colorectal, and ovarian cancer) to those not experiencing FN. Study endpoints included overall mortality (anytime during follow-up) and early mortality (during a chemotherapy course). Proportional hazards regression was used to calculate hazard ratios (HR) with 95% confidence intervals for the propensity score-matched cohort adjusted for demographics, comorbidities, and other covariates.
Results: Matched FN and control groups each included 5,176 patients; average follow-up times were 14.4 and 15.3 months, respectively. Crude incidence rates of overall and early mortality were significantly higher for patients in the FN group than in controls for combined tumor types (7.9/1000 person-months [PM] vs. 5.6/1000 PM, $P < 0.0001$; and 3.4/1000 PM vs. 2.4/1000 PM, $P = 0.0001$, respectively). Proportional hazards regression demonstrated a significant increase in risk of overall and early mortality in patients with FN compared to controls (HR = 1.53 [1.35–1.72] and HR = 1.54 [1.29–1.85]), respectively.
Conclusions: The adjusted risk of mortality in patients experiencing FN is at least 50% higher than in comparably-matched patients without FN. This supports the inference that infectious complications due to neutropenia resulting from myelosuppressive chemotherapy are still significant and should be avoided.

3006 POSTER DISCUSSION

Predictive factors for toxicity of non platinum chemotherapy

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Background: Excepted for platinum based chemotherapy (CT), the doses of anticancer drugs are usually calculated according to the body surface area. The aim of this prospective study was to identify, in a routine practice, predictive risk factors of toxicity and to evaluate their evolution over time.
Methods: Patients (pts) with solid tumours treated with a non platinum based CT were included. Several criteria were evaluated at baseline, after 3 or 6 courses (according to the protocol) and at the end of the CT: age, sex, performance status (PS), weight, type of tumour, number of previous CT, cancer treatment, renal function (Cockcroft-Gault formula) and albumin.
Results: 200 pts were included between October 2007 and June 2008 at François Baclesse Center. The most frequent types of cancer were breast (60%) and digestive (29%); 43% of pts had metastases. The main CT were Taxanes, Fec, Folfox and Folfiri. Initial characteristics were: F/M sex ratio 75%/25%, mean age 58 years (22 to 85), PS 0 79%, baseline weight loss 30%, normal renal function (creatinine clearance over than 90 mL/min) 66% and an albumin level upper than 34 g/L in 53% of cases.
During CT 30% of pts contracted an infection, 78% presented at least a grade 2 toxocity (45% after 1 cycle and 75% after 3 cycles). Toxicities were mainly dermatological (grade >1; 51%), neurological (grade >1; 38%), digestive (grade >2; 18%) and haematological (12% fever aplasia, 43% grade 3−4 neutropenia and 10% thrombopenia). As a result, 38.5% of pts had a dose reduction or a delay of CT. Moreover, 10% of pts stopped CT before the end due to toxicity. Interestingly, 67% of them had at baseline hypoalbuminemia (>grade 1) or impaired renal function (less than 90 mL/min).
During treatment, 22% of pts had a decrease of renal function. Among 38% of pts who lost weight during CT, 30% presented a decline of creatinine clearance.
In multivariate analysis, predictive factors of digestive toxicity ($p < 0.05$) were older than 65, abdominal surgery, weight loss and digestive cancers. Low level of albumin, bone radiotherapy and breast cancer predicted haematological toxicity ($p < 0.05$).
Conclusion: A majority of pts with non plainum CT develop early significant toxicity with a modification of the standard treatment protocol in about 30% of cases. Identification of baseline predictive factors should help to adjust the initial dosage of CT to anticipate toxicity. Before starting CT, renal function and albumin level should be assessed in a routine practice.

3007 POSTER DISCUSSION

Herpes zoster in solid tumor and hematologic malignancy patients – a cohort study in a managed care organization

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Background: Given the limited available data, the aim of this study was to estimate the incidence of Herpes Zoster (HZ) among patients with invasive cancer.
Material and Methods: In this retrospective cohort study, we used the Kaiser Permanente Northern California cancer registry to identify adult health plan members diagnosed with an invasive hematologic malignancy (HM) or solid tumor malignancy (STM) during 2001–2005. Potential episodes of HZ were ascertained from time of cancer diagnosis through 2006 from electronic databases using inpatient, emergency department, and outpatient diagnoses, laboratory tests, and prescriptions for antivirals. HZ diagnoses were confirmed by abstraction and clinical review of information from patients' medical records. Incidence rates were calculated as the number of new occurrences of HZ per person years (py) of follow-up. Age- and sex-standardized incidence ratios (SIRs) were computed to compare HZ rates in cancer patients to reported rates in the general population (Yawn *et al*, 2007).
Results: Among the 11,044 STM patients (mean age 66 years at cancer diagnosis, range 18–103), the overall rate of HZ was 12/1000 py (total 21,522 py); it was 15/1000 py for breast cancer patients (n = 2026), 10/1000 py for prostate cancer patients (n = 2276), 20/1000 py for lung cancer patients (n = 1498), and 7/1000 py for colon cancer patients (n = 973). In STM patients, rates of HZ increased with increasing age at cancer diagnosis. Among all 2715 HM patients (mean age 66 years at cancer diagnosis, range 18–100), the overall rate of HZ was 31/1000 py (total 4465 py); it was 51/1000 py for Hodgkin lymphoma patients (n = 154), 25/1000 py for non-Hodgkin lymphoma patients (n = 1442), 56/1000 py for multiple myeloma patients (n = 416); and 23/1000 py for patients with myeloid leukemia (n = 319). Among both STM and HM patients, rates were similar among Caucasians and African Americans and were higher in persons with higher levels of immunosuppression. The SIRs and 95% confidence intervals for STM and HM were 1.8 (1.6−2.1) and 4.7 (4.0−5.6), respectively.
Conclusions: The incidence of HZ was higher among HM patients than among STM patients and varied in both groups by cancer subtype. Compared to reported incidence rates in the general population, the rate of HZ was nearly 2 times higher in patients with STM and 5 times higher in patients with HM.

3008 POSTER DISCUSSION

Renal function evolution in cancer patients results of the IRMA-2 study

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Background: In 2007, the IRMA-1 study reported the high prevalence of renal insufficiency (RI) in cancer patients. Because of this high frequency, the IRMA-2 study started to investigate the evolution of renal function in cancer patients.
Methods: Data were collected for cancer patients presenting at one of the 19 IRMA-2 centers in March 2005. Data included: sex, age, weight, serum creatinine (SCR), haemoglobinemia, type of tumour, metastasis (bone and/or visceral) anticancer drugs. Dialysis, myeloma and lymphoma patients were not included. Glomerular filtration rate (GFR) was estimated with the abbreviated MDRD (aMDRD) formula. Patients were retrospectively followed during 2 years after the inclusion, every 6 months, from March 2005 (T0) to March 2007 (T24).
Results: 4945 cancer patients (breast 1816, colorectal 747, lung 463, ovarian 294, prostate 251 . . .) were included in 19 cancer centre in France. Median age 60.0, mean weight 66.2, 62.8% were women. In the all population, mean GFR decreased from 90.8 to 83.7 ml/min/1.73m^2 over the

2 years of the follow-up period. Meanwhile, the prevalence of RI increased, reaching 62.9% and 17.5% for a GFR <90 and <60, respectively at T24 (table). Among the 641 patients with a SCR available at T0 and at T24, the GFR decreased from 89.7 to 83.7 ml/min/1.73m^2 ($p < 0.001$) over the 2 years of the follow-up period (table). Furthermore, 41.6% of those with a GFR $\geqslant$90 at T0 had a GFR <90 at T24. Furthermore, 17.7% of patients with mild renal insufficiency (60 to 90) at T0 had a GFR >60 at T24.
Conclusion: IRMA-2 shows that renal function decreases rapidly in cancer patients with a loss in GFR of 3−3.5 mL/min/1.73m^2 per year. This suggests that cancer patients are more exposed to a deterioration of renal function and that it should be closely monitored with at least a regular estimation of renal function, for instance every 6 months. So far, such a follow-up is not performed in clinical practice. Furthermore, drug therapy should be reevaluated, dosages adjusted when necessary, and some potentially nephrotoxic drugs changed for less or non-nephrotoxic drugs if possible.

Table. Renal function among the 641 patients with an available SCR at T0 and T24

GFR (mL/min/1.73m^2)	T0	T24	Delta (T24 − T0)	p-value (between T24−T0)
Mean GFR	89.7	83.7	− 6.0	p < 0.001
GFR <90	55.7%	62.9%	+7.2%	p < 0.001
GFR >60	11.5%	17.5%	+6.0%	p = 0.001

3009 POSTER DISCUSSION

Evaluation of psycho-social distress in patients treated in a community based oncology group practice in Germany

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Background: Systematic evaluation of psycho-social distress in oncology outpatients is an important issue. Therefore we assessed feasibility and benefit of standardized routine screening using the Distress Thermometer (DT) and the Problem List (PL) in daily practice.
Materials and Methods: All patients attending the practice between July and September 2008 were administered the DT and the PL. Patients were classified into the disease groups solid tumors, hematological neoplasms, benign hematological diseases and other non-malignant diseases. The individual treatment phase was evaluated additionally. Participants in a mammography screening programme were assessed as a control group. 500 randomly selected patients were sent a feedback-form to describe how they experienced the DT's influence on the doctor-patient-communication.
Results: 1446 patients were included and reported an average distress level of 4.7. 37% indicated a distress level >5. The highest average distress level of 5.2 was seen in patients with other non-malignant diseases (81% autoimmune diseases or hereditary hemochromatosis). Concerning the treatment phases, the most distressed patients were patients who just learned about their diagnosis of relapsed or metastatic disease (6.4), patients receiving Best Supportive Care (5.4) and patients receiving adjuvant anti-hormonal therapy (5.4). The most frequently indicated problems causing distress were exhaustion/fatigue (49%), pain (44%), impaired mobility (41%) and sleep disorders (39%) respectively. A significant correlation existed between the distress score and the total number of stated problems as well as between the number of emotional problems and the number of physical problems. Breast cancer patients stated a distress level of 5.2. The average distress level in mammography screening participants was 3.3. 97% of patients who returned the feedback-form indicated that they appreciated to speak to their doctor about their distress. 56% of distressed patients felt better than usual after this consultation.
Conclusions: The study shows that cancer patients do not necessarily show higher distress than patients with severe non-malignant diseases. The problems patients most frequently indicate as distressing are somatic disorders. DT and PL are applicable for routine screening in an outpatient setting. Physicians as well as patients stated that the use of the DT improved the quality of their communication.

3010 POSTER DISCUSSION

Prevalence and causes of burnout syndrome among oncology residents in France: a comprehensive cross sectional study

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Background: Burnout syndrome is frequent among oncology healthcare workers. It leads to deterioration of physicians' health and quality of life. It also probably discourages vocations for oncology and has a detrimental effect on patient-physician relationship. Little is known, however, about the prevalence and causes of burnout among oncology junior doctors.
Materiel and Methods: A questionnaire was sent out to every medical or radiation oncology resident in France (n = 215). The survey was anonymous and confidential. It was divided into seven parts: demographical data, burnout level (Maslach Burnout Inventory, MBI), type of stressors, emotional work, sense of equity at work, type of support, general health level and alcohol/drug intake. Validated scales were used when available. Two reminder e-mails were sent out to increase response rate.
Results: Questionnaires were sent on March 1st 2009 and collected until April 20th. One hundred and fifty four questionnaires were returned and analyzed. The response rate is 72% (154/215). Emotional exhaustion (EE) and Depersonalisation (DP), the major components of burnout syndrome, were reported respectively by 25% (n = 39, CI95% = [0.19, 0.33]) and 38% (n = 59, CI95% = [0.31, 0.46]) of the residents. Burnout prevalence was 42% (n = 64, CI95% = [0.34, 0.50]), defined by a severely abnormal level of either EE or DP scores. Twenty percent of the residents (n = 31 CI95% = [0.14, 0.28]) had severely abnormal levels of both EE and DP. Burnout was associated with a lower perception of one's general health status (good/very good versus average/poor, p = 0.0006). Burnout level is higher among residents who don't feel adequately rewarded for their work and commitment (OR = 2.5; $p < 0.01$). No demographical characteristics (age, sex, marital status, length of service) were predictive of burnout. Prevalence of burnout was not significantly different between radiation and medical oncology residents (p = 0.55).
Conclusion: Burnout level is high among oncology residents. Multiple factors can be involved: young age, lack of experience, work overload, and the fact that residents mostly face seriously ill patients or end of life situations. Interventions are needed to improve this situation, such as support groups, more intense coaching by senior physicians, training programs on "breaking bad news" and teaching of stress management skills.

3011 POSTER DISCUSSION

Service patterns of integrated oncology and palliative care, focused on interdisciplinary outpatient clinics

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Background: Palliative Cancer Care (PCC) delivers multidimensional symptom staging and control, sequential decision making processes fostering patient-priority and goal-directed interventions including anti-cancer therapies, communication interventions, family care, and support networks of in- and outpatient clinics and community. We aim to test the hypothesis, that distinct service patterns can be identified in a setting of an ESMO-designated center of integrated oncology and palliative care.
Methods: All service contacts following the first outpatient PCC clinic visit (including 1. interdisciplinary clinic focused on nutrition and fatigue, 2. Supportive-palliative nurse-physician-clinic, 3. physician-based clinic) were tracked for date and type (emergency unit, inpatient palliative care unit, inpatient oncology clinic, hospital palliative care mobile team, palliative care bridge service, home care nurses and general practitioners [GP]). The time and location of death was identified through charts and GPs. Patterns of integration of oncology and PCC (Pa-IOP) where characterized in calibration sample of patients, definitions where refined until consensus was reached. Then the whole sample was analyzed.
Results: The PCC outpatient clinic included 373 patients (230 male, 143 female; median age 63.5; with mixed tumor types (16% lung, 15% colorectal, 7% prostate, 12% ovarian, 50% other) having over 2000 consultations (1 visit: 113; 2−5: 134; 5−10: 46; >10: 60). The time range