Calculation of cost of relapse:

Timeframe was the first year after diagnosis. We based our calculation on the following assumptions:

According to current guidelines, all stage I SGCT patients would receive active surveillance irrespective of risk factors, which lead to relapse rates of approximately 20% [1]. There seem to be risk factors indicating an elevated risk of recurrence, such as tumour size > 4cm and invasion of the rete testis, but prospective validation is still lacking [2]. Still, patients' will or doctors' preferences might differ from guidelines. AS was chosen after orchiectomy by 27% of the patients during the entire study period and by 63% of the patients in period 2011 – 2013, which is comparable to 54% recently published by Gray et al. [3].
19% of the entire cohort received carboplatin and 54% had radiotherapy, which is slightly different to 16% and 29% from the above-mentioned study, but the different periods of data acquisition might readily explain those differences. Approximately 75% of all relapses on AS occur during the first year [4]. Patients managed by either radiotherapy or one cycle carboplatin (AUC 7) have a risk of recurrence as low as 2% [2, 5]. Those relapsed would receive 3 cycles of PEB as most patients relapse in a good or intermediate prognosis stage [6]. To keep our calculation simple, we assumed that none of the relapsed patients would receive primary radiotherapy, which is a potential alternative for patients with only retroperitoneal lymph nodes < 5cm. Usually, a residual tumor resection is not necessary as the rate of complete remission is >90% [7].

In NSGCT patients, high risk and low risk of relapse are distinguished according to the risk factors vascular invasion, percentage of embryonal carcinoma and Ki-67 proliferating index. Approximately 70% percent of NSGCT CS I patients have a low risk constellation and could be managed by active surveillance [8]. Conversely, one third have a high risk of relapse and are recommended to receive one cycle of BEP [8, 9]. In our own cohort, the percentage of patients treated with chemotherapy was 47% vs. 28% managed by surveillance and 25% managed by RPLND. Low risk patients on surveillance have a 15% relapse risk whereas high risk patients have a 50% risk of recurrence which declines to 3% after 1 cycle of BEP [9]. After RPLND, approximately 25% of CS I patients are found to have pN+ and require further chemotherapy. Roughly 10% of those patients initially found pN0 after RPLND subsequently develop metastasis, mainly outside the dissected template. Altogether, some 35% of patients undergoing RPLND will later receive chemotherapy [2]. Approximately 80% of all relapses occur within 12 months after diagnosis. Disease recurrence is usually detected in a good or intermediate prognosis situation, thus 3 cycles of BEP were the basis for our cost calculation [6]. About 25% of these patients will have to undergo post-chemotherapy residual tumour resection [2].

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