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Andrology Lab Corner*

Sperm Cryopreservation: Recent and Marked Increase in Use for Testicular Cancer Compared With Hodgkin Disease

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In a public network of sperm banks, time trends in use of sperm cryopreservation by men with testicular cancer (TC) and Hodgkin disease (HD) were assessed from 1990 to 2004. During this period, overall incidence of sperm cryopreservation rose from 1.08 to 3.06 per 100 000 person-years for TC and from 0.79 to 1.20 for HD. Modeling suggests that in 2010 the expected rate will reach 5.90 per 100 000 for TC, compared with 1.39 for HD. This increase in sperm cryopreservation for TC and HD is similar to increases observed in incidence of these 2 diseases in France and other European countries.

Although TC and HD are rare malignancies, they are the most common cancers in adolescents and young men ([Bray et al, 2002](#)). Recent advances in chemotherapy and/or radiotherapy treatments have improved the long-term survival of patients with these diseases (5-year survival rate is approximately 90%). Nevertheless, the side effects of treatment, especially infertility (decrease of 30%), are still a major preoccupation for these young patients who often have not yet fathered children ([Huyghe et al, 2004](#)). Accordingly, sperm cryopreservation and sperm banking are now offered to these men before treatment to preserve their capacity to conceive naturally or through assisted reproduction techniques ([Hallak et al, 1999](#); [Magelssen et al, 2005](#)). With this aim in mind, a unique public network of sperm banks (Centre d'Etude et de Conservation des Oeufs et du Sperme [CECOS]) was created in France in 1984, and 22 centers now cover the whole country. Sperm banks appear to be

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Increasingly used for sperm donation and to offer the possibility of preserving sperm in the event of disease or surgical treatment, especially for men with HD and TC ([Agarwal, 2000](#)). The recent and marked increase of these diseases in most industrialized countries is a major concern ([Parkin et al., 1997](#)), drawing the attention of oncologists to the need for sperm cryopreservation. Although this option is still underutilized, it is now becoming a good and safe practice to safeguard future fertility ([Chung et al., 2004](#)).

The aim of this study was to assess time trends in the use of sperm banking over the period of 1990 to 2004 by men with TC or HD.

Materials and Methods

Data on the use of sperm cryopreservation before the treatment of TC or HD were obtained from the 22 French CECOS centers (regional sperm banks in Alsace, Aquitaine, Auvergne, Basse-Normandie, Bretagne, Centre, Champagne-Ardenne, Franche-Comté, Haute-Normandie, Ile de France, Languedoc-Roussillon, Lorraine, Midi -Pyrenees, Nord-Pas de Calais, Pays de la Loire, Picardie, Provence-Alpes-Cotes d'Azur, and Rhône-Alpes) from 1990 to 2004. Trends (adjusted for the whole French population with a mean annual number of 28 165 984 person-years) and average annual percent change of incidence were calculated using a Poisson regression model. Furthermore, use of sperm cryopreservation was estimated from the slopes derived from the curves, and its expected incidence after 2004 was calculated.

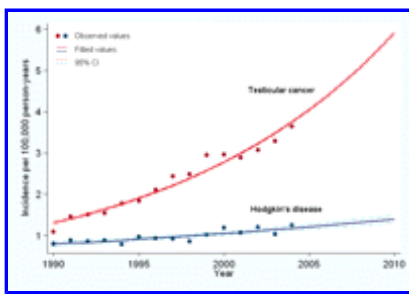
Analyses were performed using Stata SE 8.2 software (StataCorp, College Station, Tex) with a significance level of .05.

Results

For TC, the number of men using sperm cryopreservation rose from 299 to 837 from 1990 to 1999 and reached 1033 in 2004, an average annual increase of 7.54% (95% confidence intervals [CI] = 7.08–8.02). For HD, the number of men using sperm cryopreservation was 218 in 1990, rising to 352 in 2004 (average annual increase of 2.86%; 95% CI = 2.15–3.57) ([Table](#)).

View this table: [in this window] [in a new window]	<i>Number of men using sperm cryopreservation for testicular cancer and Hodgkin disease from 1990 to 2004 and average annual percent change derived from Poisson regression</i>
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As shown in the [Figure](#), from 1990 to 2004, the overall incidence of sperm cryopreservation for TC rose from 1.08 to 3.64 per 100 000 person-years. A slight increase was also observed during the same study period in the use of sperm cryopreservation by men with HD, rising from 0.79 to 1.24 per 100 000 person-years.



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Incidence of sperm cryopreservation for testicular cancer and Hodgkin disease from 1990 to 2010. Color figure available online at <http://www.andrologyjournal.org>.

After 2004, the expected numbers derived from a Poisson regression model suggested that in 2010 the sperm cryopreservation rate will reach 5.90 (95% CI = 5.84– 5.96) per 100 000 person-years for TC compared with 1.40 (95% CI = 1.30– 1.49) per 100 000 person-years for HD.

Discussion

Our results showed strong evidence for the increasing use of sperm cryopreservation over time for TC, whereas over the same period the increase for HD was less marked (7.54% vs 2.86%, respectively). Interestingly, this increase in sperm cryopreservation for TC and HD is similar to the increase observed in the incidence of these two diseases in France and other European countries.

In France, Remontet et al (2003) showed, from the records of the Association of French Cancer Registries covering the Calvados, Doubs, Hérault, Isère, Manche, Bas-Rhin, Haut-Rhin, Somme, and Tarn regions, that TC incidence increased from 4.0 to 4.8 per 100 000 from 1990 to 2000, whereas the incidence of HD was fairly stable, decreasing from 2.6 to 2.2 (Remontet et al, 2003).

In other European countries, a recent and remarkable increase in TC incidence has been reported, with an average annual increase of 3.0% (95% CI = 2.7– 3.3) in Norway, 3.9% (95% CI = 0.4– 4.3) in Finland, and 4.9% (95% CI = 0.0– 10.0) in Lithuania (Richiardi et al., 2004). For HD, a recent publication collecting data from 4230 HD cases from 19 European countries through the Automated Cancer Information System indicated a yearly increase of 0.9% in the age group of 10 to 14 years and of 3.4% in the age group of 15 to 19 years over the period of 1978 to 1997 (Clavel et al, 2006).

The difference in trend observed between the use of sperm cryopreservation by men with TC and men with HD cannot be explained only by improvements in diagnosis or better information about treatment side effects in these 2 diseases. The observed discrepancy suggests a drastic change in exposure to etiologic factors for TC (Garner et al, 2005).

Limitations

Our data do not relate to a fully representative sample of all cases of TC and HD in France. Nevertheless, although sperm cryopreservation must be considered only as an indirect indicator of the true incidence of these 2 diseases (Chung et al, 2004), we may assume that the crude sperm cryopreservation incidence observed in our series (age-standardized incidence rates could not be calculated as data were totally anonymous) indicates trends in the evolution of the 2 diseases and also reflects the faster increase in TC incidence.

In conclusion, the incidence of these 2 diseases and sperm cryopreservation follow the same trend, with a marked increase for TC and stabilization for HD. This finding confirms the so-far unexplained large increase in TC incidence and consequently the need for andrologists and oncologists to advise men of the value of preserving their sperm to safeguard future fertility.

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Footnotes

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