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BRIEF REPORT

Late pregnancy abortions: an analysis of Québec stillbirth data, 1981–2006

Nathalie Auger · Geoffroy Denis

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Abstract
Objectives We evaluated late pregnancy abortions from 1981 to 2006 in Québec, Canada.
Methods We extracted late abortions from the stillbirth mortality file, and calculated yearly rates per 100,000 pregnancies, including mean gestational age, birth weight, maternal age and education.
Results There were 14.4 late abortions per 100,000 overall pregnancies [95% confidence interval 12.9, 16.1], and rates appeared to increase with time. Mean gestational age (24.7 weeks) and birth weight (886 g) suggested that abortions were performed in the late second and third trimesters.
Conclusions Late abortions in Québec are not common but do occur. Research is needed to determine whether the increase in rates over time reflects better reporting or a true increase. Improved surveillance of late abortions may be warranted.

Keywords Induced abortion · Gestational age · Pregnancy trimester · Stillbirth · Trends

Résumé
Objectif Évaluer les avortements tardifs au Québec, Canada, 1981–2006.
Méthode Les avortements tardifs ont été extraits du fichier des mortinaissances, et les taux par 100,000 grossesses ont été calculés, ainsi que l'âge moyen gestationnel, le poids à la naissance, l'âge et l'éducation maternel.
Résultat Il y avait 14,4 avortements tardifs pour 100,000 grossesses (intervalle de confiance de 95% = 12,9–16,1). Les taux semblent augmenter avec le temps. L'âge moyen gestationnel (24,7 semaines) et le poids (886 g) suggèrent que les avortements se sont produits pendant les deuxième et troisième trimestres.
Conclusion Les avortements tardifs demeurent rares au Québec mais se produisent. Il reste à déterminer si l'augmentation dans le temps est réelle ou est la conséquence d'une meilleure collecte de données. La surveillance des avortements tardifs semble justifiée.

Introduction

Data on abortions late in pregnancy are scant, despite effective public health strategies for prevention. Trends in the US and Canada are usually reported according to the age of women, but not for advanced gestational ages or late trimesters (Health Statistics Division 2008; Gamble et al. 2008). The general absence of data on late abortions has also been under media scrutiny (Somerville 2010). Furthermore, no clear definition of what constitutes a late abortion exists. In the province of Québec, Canada, late abortions in the second and third trimesters of pregnancy are recorded in the stillbirth registry; however, these data

N. Auger (✉)
Institut National de Santé Publique du Québec, 190, boulevard Crémazie Est, Montreal, QC H2P 1E2, Canada
e-mail: nathalie.auger@inspq.qc.ca

N. Auger
Research Centre of the University of Montréal Hospital Centre, 3850, rue Saint-Urbain, Montreal, QC H2W 1T7, Canada

N. Auger · G. Denis
Department of Social and Preventive Medicine, University of Montréal, PO Box 6128, succursale Centre-ville, Montreal, QC H3C 3J7, Canada

have not been analyzed. In light of the lack of surveillance data in the literature, we evaluated trends in late abortions over 25 years from 1981 to 2006 for Québec.

Methods

All abortions labeled "terminations of pregnancy" were identified using International Classification of Disease (ICD) codes 779.6 (9th revision, before 2000) and P96.4 (10th revision, 2000 onwards) for principal cause of stillbirth ($N = 318$). The total number of live births and stillbirths was obtained ($N = 2{,}203{,}709$ pregnancies). Stillbirths in Québec by definition only include intrauterine deaths ≥500 g, while live births include newborns showing any sign of life irrespective of birth weight (Institut national de santé publique du Québec 2006). The obstetrical method used to perform abortions was not available, nor were late abortions with birth weight <500 g or early abortions performed in hospitals or specialized clinics.

Late abortion rates (95% confidence intervals, CI) were calculated as the number of aborted pregnancies divided by the yearly overall number of live births and stillbirths (Carriere and Roos 1994). To obtain conservative rate estimates, live births <500 g were not excluded from analyses. Mean (standard deviation, median, range) gestational age, birth weight, maternal age and education for aborted fetuses were computed, and means before 1998 were compared with those after 1998 (since a relatively large change in rates appeared to occur in 1998). The institutional review board of the University of Montréal Hospital Centre waived the requirement for ethical approval, as this study conformed to the 2010 Tri-Council Policy Statement for ethical conduct of research involving humans in Canada.

Results

Late abortions were performed for 14.4 [95% CI 12.9, 16.1] per 100,000 pregnancies overall. Rates increased over the 25-year period beginning with an upturn in 1998 and no plateau by 2006 (Fig. 1). The gestational age (mean 24.7 weeks, range 16–37) and birth weight (mean 886 g, range 500–3,165) of aborted fetuses indicated that the abortions were performed during the late second and third trimesters (Table 1). The mean gestational age of fetuses aborted after 1998 was 1.9 weeks greater than the mean before 1998 ($p < 0.01$). Similarly, the mean birth weight after 1998 was higher by 212 g ($p < 0.01$). Mean maternal age (27.9 years) was stable over time but mean education (13.1 years) increased slightly.

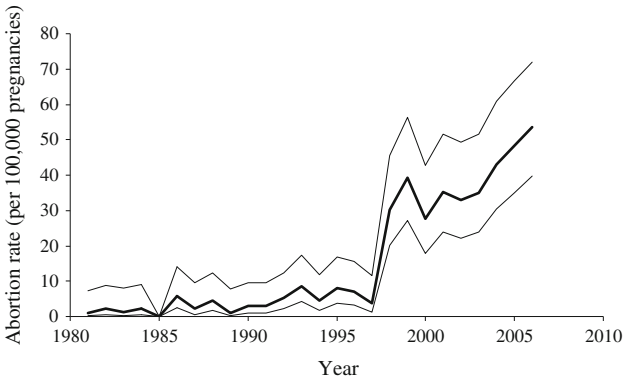

Fig. 1 Yearly rates of late abortions (≥500 g) per 100,000 pregnancies in Québec, 1981–2006. Rates (*bold central line*) and 95% confidence intervals (*faded outer lines*)

Discussion

This study of Québec stillbirth data suggests that pregnancy terminations were practised during the late second and third trimesters of pregnancy from 1981 to 2006. Contrary to current belief (Kaposy 2009), this study provides evidence that abortions late in pregnancy do occur. According to the Therapeutic Abortions Database, the ratio of induced abortions to live births was stable in Québec over the past decade at roughly 40 abortions per 100 live births (Health Statistics Division 2008; Institut national de santé publique du Québec 2006). However, data were not

Table 1 Characteristics of late abortions classified as stillbirths in Québec, 1981–2006 ($n = 317$)

	Mean (standard deviation)	Median	Range	Difference between means for ≥1998 versus <1998[a]	p value for difference of means
Gestational age (weeks)	24.7 (4.2)	23	16–37	+1.9	<0.01
Birth weight (g)	886 (553)	650	500–3,165	+212	<0.01
Maternal age (years)	27.9 (7.0)	28	14–46	+0.9	0.3
Education (years)	13.1 (3.4)	13	2–24	+1.7	<0.01

Excludes one abortion for which data were missing. Education data were missing for 99 cases (31.1%)

[a] Represents the mean increase that occurred from 1981–1997 to 1998–2006

reported according to gestational age, were influenced by the greater number of first trimester abortions, and potentially did not include late abortions performed at advanced gestational ages. In the US, 1.3% of abortions occur at gestational ages ≥21 weeks, but patterns over time and at more advanced gestational ages are unclear (Gamble et al. 2008).

What might explain our findings? In Québec, routine prenatal ultrasounds performed around 18–20 weeks are covered by universal health insurance; however, screening for congenital anomalies among women <35 years is not covered before the 20-week ultrasound. Abortions performed after 20 weeks may, therefore, be related to fetal anomalies detected during the 20-week ultrasound (Wyldes and Tonks 2007). However, this does not entirely explain why late abortion rates have risen, or why the mean gestational age and birth weight of aborted fetuses increased. Furthermore, the average age of women having late abortions was stable, making it less likely that congenital anomalies were responsible (as some fetal defects are less common among younger women). Folic acid fortification of grain products was started in December 1998, and would also have reduced the prevalence of fetal anomalies (De Wals et al. 2007; Ionescu-Ittu et al. 2009). These patterns may potentially be related to a greater tendency over time to use ICD codes for termination of pregnancy rather than those for congenital anomalies on death certificates, making it difficult to identify late abortions in the 1980s and early 1990s (Bartholomew et al. 2008). Other changes in reporting of stillbirths may also have occurred with time, including the possibility that late abortions may not have been counted as stillbirths earlier on. Though the stillbirth file is generally considered complete, the extent to which this is the case has, to our knowledge, not been formally evaluated.

Unfortunately, we did not have data on the method used to perform abortions. To avoid live births, late abortions may be preceded by feticide, a procedure requiring advanced ultrasound technology not available until the 1990s (Graham et al. 2008). Relative unavailability of this procedure may in part explain the low rates in the 1980s and early 1990s. It may also be that some late abortions were performed for unwanted pregnancies, or that delays in suspecting or testing of pregnancy have increased (Drey et al. 2006). Access-related issues—either easier access late in pregnancy or harder access early on resulting in delays—may be contributors.

The shift from the ninth to tenth revision of the ICD in year 2000 does not explain these findings because rates began increasing beforehand. Patterns are also unlikely to be related to the 1988 legalization of non-therapeutic medical termination of pregnancy when the Supreme Court of Canada struck down a 1969 abortion law (given that abortion rates only began to increase a decade later) (Health Statistics Division 2008).

These estimates are limited by probable underreporting of principal cause of death on stillbirth certificates (secondary causes of death were not available). Data were not available for late aborted fetuses with birth weights <500 g that were by definition not included in the stillbirth file, for labor inductions meant as abortions that inadvertently resulted in live births, or for late abortions performed outside the province.

This study indicates that late abortions are practiced in Québec and that rates may be increasing. The underlying reasons are unclear, and underreporting is also likely. Further research is needed to identify reasons and methods used for late abortions, and to determine patterns in the US and internationally. Public health surveillance systems for abortions require improvement, and should address surveillance of late abortions.

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Conflict of interest The authors declare that they have no conflict of interest.

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