

Cellular Phone Use and Risk of Benign and Malignant Parotid Gland Tumors
A Nationwide Case-Control Study

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FROM ABSTRACT

The objective of this nationwide study was to assess the association between cellular phone use and development of parotid gland tumors (PGTs).

The methods were based on the international INTERPHONE study that aimed to evaluate possible adverse effects of cellular phone use. The study included 402 benign and 58 malignant incident cases of PGTs diagnosed in Israel at age 18 years or more, in 2001–2003, and 1,266 population individually matched controls.

Analysis restricted to regular users or to conditions that may yield higher levels of exposure (e.g., heavy use in rural areas) showed consistently elevated risks [for parotid gland tumors].

For ipsilateral use, the odds ratios in the highest category of cumulative number of calls and call time without use of hands-free devices were 1.58 [58% increased risk] and 1.49 [49% increased risk], respectively.

The risk for contralateral use was not significantly different from 1 [no increased risk].

A positive dose-response trend was found for these measurements.

Based on the largest number of benign PGT patients reported to date, our results suggest an association between cellular phone use and PGTs.

THESE AUTHORS ALSO NOTE:

“Since the mid-1990s when cellular phones became widespread in most Western countries, there has been concern about the possible carcinogenic effects of the electromagnetic radiofrequency fields thereby emitted.”

“The absorption of radiofrequency energy emitted by cellular phones is attenuated by more than 90 percent within 40–50 mm from the exposure source.” [approximately 2 inches]

Because the parotid gland is 4–10 mm below the skin surface, it is a plausible candidate for being influenced by exposure to cellular phones.

“When analyses were restricted to regular users only, increased odds ratios were seen for start of use 5 years or more in the past, as well as for cumulative number of calls and cumulative call time.”

Elevated odds ratios were found for ipsilateral use 5 years and 10 years in the past.

“For all exposure measures studied, the odds ratios for above-median ipsilateral use were elevated and statistically significant: 1.58 [58% increased risk] for cumulative number of calls and 1.49 [49% increased risk] for cumulative call time. Significant trends were seen for ipsilateral use for cumulative number of calls and for cumulative call time.”

DISCUSSION

“Our results suggest a relation between long-term and heavy cellular phone use and parotid gland tumors.”

“Significantly elevated odds ratios [for parotid gland tumors] were observed consistently in the highest category of each of the measures of cellular phone use on the ipsilateral side, supporting a dose-response association.”

“In addition, a positive association was seen for cellular phone use in rural areas, which was not shown for use mainly in urban areas.”

“Because radiofrequency energy absorption is very localized, if radiofrequency exposure increases the risk of PGTs, any increase will be seen on the side of the head where the phone is usually held, and no effect will be observed on the opposite side.”

“In the ipsilateral, urban/rural, and regular-user analyses, our data showed increased odds [for parotid gland tumors] in the highest categories of [cell phone] use consistently over the different exposure measures supporting a dose-response relation.” **[Important]**

Several studies suggest an increased risk of tumors among those who started cell phone use 10 years or more in the past, particularly for ipsilateral use.

A Swedish study reported a significantly increased risk for acoustic neuroma for 10 years or more of ipsilateral use by 290%, and nonsignificantly increased risks for glioma and meningioma.

“An important determinant of output power is distance from base stations. In rural areas where base stations are located far apart, the average output power of phones tends to be higher than that in urban areas.”

“Our results showed that the increased risk from cellular phone use was confined mostly to use involving rural areas.”

“In conclusion, based on the largest group of benign parotid gland tumor patients reported to date, a number of complementary analyses suggest a positive association between cellular phone use and parotid gland tumors.”

KEY POINTS FROM DAN MURPHY

- 1) This study showed that increased cell phone use or using a cell phone in a rural area increases the risk of parotid gland tumors on the ipsilateral side as compared to controls.
- 2) For ipsilateral use, the highest category of cumulative number of calls and call time without use of hands-free devices increased the risk of parotid gland tumors by 58%.
- 3) For ipsilateral use, regular use of a cell phone in a rural area without use of hands-free devices increased the risk of parotid gland tumors by 49%.
- 4) These results suggest an association between cellular phone use and parotid gland tumors.
- 5) “Since the mid-1990s when cellular phones became widespread in most Western countries, there has been concern about the possible carcinogenic effects of the electromagnetic radiofrequency fields thereby emitted.”
- 6) The absorption of radiofrequency energy emitted by cellular phones is attenuated by more than 90% within about a 2-inch distance from the exposure source.
- 7) Because the parotid gland is 4–10 mm below the skin surface, it is a plausible candidate for being influenced by exposure to cellular phones.
- 8) When the analyses was restricted to regular cell phone users, there was an increased risk of parotid gland tumors for ipsilateral use 5 years and 10 years in the past, as well as for cumulative number of calls and cumulative call time.
- 9) “For all exposure measures studied, the odds ratios for above-median ipsilateral use were elevated and statistically significant: 1.58 [58% increased risk] for cumulative number of calls and 1.49 [49% increased risk] for cumulative call time. Significant trends were seen for ipsilateral use for cumulative number of calls and for cumulative call time.”

- 10) "Our results suggest a relation between long-term and heavy cellular phone use and parotid gland tumors."
- 11) "Significantly elevated odds ratios [for parotid gland tumors] were observed consistently in the highest category of each of the measures of cellular phone use on the ipsilateral side, supporting a dose-response association."
- 12) "In addition, a positive association was seen for cellular phone use in rural areas, which was not shown for use mainly in urban areas."
- 13) "Because radiofrequency energy absorption is very localized, if radiofrequency exposure increases the risk of PGTs, any increase will be seen on the side of the head where the phone is usually held, and no effect will be observed on the opposite side."
- 14) "An important determinant of output power is distance from base stations. In rural areas where base stations are located far apart, the average output power of phones tends to be higher than that in urban areas."
- 15) "In conclusion, based on the largest group of benign parotid gland tumor patients reported to date, a number of complementary analyses suggest a positive association between cellular phone use and parotid gland tumors."