Specialisation of treatment of bone sarcomas in England

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Overview

- Methodology
  - Identifying surgical treatment
  - Identifying specialist centres

- What is the effect of…
  - Cancer site
  - Age
  - Distance to a specialist centre
  - Deprivation
Cancer Registry Data

Pathology Reports → Oncology Notes → Regional Cancer Registries → National Cancer Data Repository

Cancer Registries collect data on all invasive, in-situ and uncertain tumours, including pathology. Treatment information is limited but improving.

HES Data

Clinical Coders in Trusts → Information Centre for Health and Social Care → National Cancer Data Repository

NHS Trusts collect data on all in-patient admissions for all conditions (including cancer). Treatment information is coded, but detailed pathology is unavailable.
Methodology

- Identified all primary bone cancers 2000-2007 using ICD 10 codes on registry data – 3,500 bone sarcomas
- Linked to HES data using NHS number and demographics
- Identified care episodes for cancer using ICD 10 codes on HES data.
- Identified surgical treatment from HES using OPCS 4 codes relating to orthopaedic surgery.
- HES data includes Trust of treatment code

Specialist centres

- Included the 5 specialist centres
  - London Sarcoma Service / RNOH
  - Oxford Sarcoma Service
  - Newcastle
  - ROH, Birmingham
  - Greater Manchester and Oswestry Sarcoma Service

- Included Bristol
  - Was working as specialist centre between 2000 – 2007
  - PCTs near Bristol clearly referring into Bristol in this period.
All patients

Hospital admission

Surgical treatment

0% 25% 50% 75% 100%

By specialist  By non-specialist  Both  Details unknown  No record

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Cancer Site - specialisation

0% 25% 50% 75% 100%

Long bones of lower limb
Long bones of upper limb
Pelvis
Short bones of lower limb
Short bones of upper limb
Limb unspecified
Unspecified
Rectum, sigmoid, colon
Ventral column
Skull and face
Mandible

These differences remain when we adjust for other factors (age, sex, deprivation, distance from specialist centre)

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These differences remain when we adjust for other factors (age, sex, deprivation, distance from specialist centre).
Age - specialisation

Adjusting for factors only explains part of the trend (cancer site is main driver)

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Age – surgical treatment

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Age – surgical treatment

- Adjusting for factors explains the trend in under 60's
  - cancer site is main driver
- Elderly patients less likely to receive surgery
  - but haven’t adjusted for co-morbidities

Distance - specialisation

These differences increase when we adjust for other factors (age, sex, deprivation, cancer site)
Distance – surgical treatment

- No clear trend for treatment in specialist centre
- Trend for any surgical treatment *increases* with distance?
  - Not statistically significant
- Adjusting for other variables does not dampen trends.

Deprivation – specialisation

- Seen specialist
- No Specialist
- No HES

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Deprivation – surgical treatment

Deprivation – age profile
Deprivation – distance

- No trend with deprivation before we adjust
- But adjusted data shows a trend.
Conclusions

• Large national datasets allow analysis of rarer cancers
• Data quality remains a problem
• Cancer site, age, distance to a specialist centre and deprivation all affect whether sarcoma patients are seen by specialists and treated surgically
• Multivariate analysis is a powerful tool for understanding trends in cancer data
• Analysts must work closely with clinicians to understand what appropriate patient pathways look like