Metastatic basal cell carcinoma to the bone: a case of bone metastasis in uncommon sites

Olga Nigro, Claudio Chini, Ilaria Gioia Angiola Marcon, Annamaria De Giorgi, Linda Bascialla, Elisa Gallerani, Alice Giaquinto, Diego De Palma, Maurizio Lombardo

Dermatology Reports, Vol 14, No 3 (2022)

Supplementary Table 1.
Reports of patients with diagnosis of Basal Cell Carcinoma metastatic to the bone (1930-2020).

| Author, year * | Gender | Age | Primary tumor site | Bone met | BM met | Other | Time between primary tumor and metastasis | Survival after diagnosis of mts | Treatment s of metastasis |
|----------------|--------|-----|--------------------|----------|--------|-------|------------------------------------------|-------------------------------|-------------------------------|
| Spies JW 1930  | NR     | NR  | Cheek              | Yes      | Lung, liver, spleen, dura | 10 years | 6 months | X-ray |
| De Navasquez S1941 | NR | NR | Forehead          |          | Lung    | 20 years | 1 year    | X-ray |
| Singer A 1944   | NR     | NR  | Face               | Yes      | Lung    | 5 years | 2 months | none |
| Cotran RS 1961  | NR     | NR  | Scapula            | Yes      | Liver, pancreas, lung, spleen | 45 years | 1 year    | X-ray |
| Crawford HJ 1964 | NR | NR | Scalp             | Yes      | Lung    | 9 years | 2 months | none |
| Chien WL 1966   | NR     | NR  | Ear                | Yes      | Lung    | 7 years | 6 months | X-ray |
| Stell JS 1966   | NR     | NR  | Nasolabial         |          | Lung    | 7 years | 1.6 years | X-ray |
| Assor D 1967    | NR     | NR  | 1) Nasolabial 2) Scalp | 1) Yes 2) Yes | Lung    | 1) 6 years 2) 3 years | 1) 1 year 2) NR | 1) none 2) X-ray |
| Coletta DS 1968 | NR     | NR  | Leg                | Yes      | Lung    | 5 years | 0         | none |
| Crammer L 1970  | M      | 42  | Right scapula      | Left femur | Skin    | 6 years | NR        | X-ray |
| Beretta G 1970  | NR     | NR  | Eyelid             | Yes      | Lung    | 6 years | 1 year    | X-ray |
| Hall TE 1970 (2 pts) | NR | NR | 1) Chest 2) Eyelid |          | 1) LN 2) LN, lung, dura | 1) 10 years 2) 22 years | 1) 6 years 2) 5 years | 1) none 2) none |
| Mantell BS 1972 | NR     | NR  | Scalp              | Yes      | Lung    | 15 years | NR        | X-ray |
| Cornelius CE 1972 | NR | NR | Nose               | Yes Yes | Lung    | 6 years | 1 year    | none |
| Harris JH Jr 1972 | NR | NR | Orbit, nose       | Yes      |         | 17 years | 2.6 years | X-ray |
| Jackson R 1973  | NR     | NR  | 1) Upper lip 2) Neck | 1) Yes 2) Yes | Lung 2) LN | 1) 13 years 2) 8 years | 1) 1 year 2) 2 years | 1) X-ray 2) X-ray |
| Funkhouser JW 1973 | NR | NR | Cheek              | Yes      |         | 19 years | 6 months | X-ray |
| Mikhail GR 1977 (2 pts) | 1) M 2) F | 1) 57 2) 59 | 1) Left cheek 2) Face | 1) Left iliac bone, L2 Left mastoid 2) Maxillary bone, column, ischium 2) Parietal scalp, sc tissues | 1) 8 years 2) 9 years 1) 1 year 2) 1.5 year | 1) 9 years 2) 1.5 year | 1) Bleomycin 2) Bleomycin MTX + Leucovorin |

*references are intrgally reported after the table
| Name            | Year | Gender | Age | Location                  | Metastases | Duration | Treatment                        |
|-----------------|------|--------|-----|---------------------------|------------|----------|-----------------------------------|
| Christeen M     | 1978 |       |     |                           | Yes        | 1 year   | Surgery, RT                       |
| Bryarly RC 1980 |      |       |     | Right ear, Left femur, ribs, sternum | Yes        | 1 year   | Surgery, RT                       |
| Rugge M 1982    |      |       |     |                           | Yes        | NR       | NR                                |
| Kleinberg C 1982|      |       |     |                           | Yes        | NR       | NR                                |
| Weshler Z 1984  |      |       |     | Eye, Frontal bone, C7, T8-T10, ribs, pelvis, right ilium, left femur | Dura       | 2 years | Surgery, RT, RT                   |
| Conley J 1985   |      |       |     | Nose | Lung, skin, sc tissues, hypopharynx | NR        | NR    | Surgery                          |
| Hartman R 1986  |      |       |     | Column | Column | Yes    | RT                                |
| Winkler PA 1987 |      |       |     | Forehead (Gorlin Syndrome) | Skull, ribs | Lung | 22 years | Surgery, CHT                     |
| Postlethwaite KR 1990 |      |       |     | Face | Local bones | Liver, gut | 1 year | NR    |
| Bason MM 1990   |      |       |     | Neck, Vertebrac, ribs, clavicles, femurs | Yes | 0 | Cisplatin + Bleomycin + MTX + Leucovorin |
| Quin JD 1990    |      |       |     | Rib | 0 | 2 months | none |
| Lo JS 1991      |      |       |     | Head | 1) Brain | 1) NR | 1) 3 months | 1) none |
| Ko CB 1992      |      |       |     | Scalp | 2) Dura, brain | 2) 7 years | 2) Surgery, RT |
| Beer RE 1992    |      |       |     | Scalp | 2) Local bones | 5 years | 10 months | Surgery |
| Morselli P 1993 |      |       |     | Scalp | 3) Local bones | 3) NR | 3) 0 | Surgery |
| Long SD 1993    |      |       |     | Scalp | 3) Glabella | 3) Local bones | 3) Local skin | Local |
| Oram Y 1994     |      |       |     | Scalp | 4) Temple skin | 4) T4-T6 | Yes | Surgery, RT, Cisplatin + Adriamycin |
| Wallimy T 1996  |      |       |     | Scalp | 4) Scalp, left leg | 4) Local bones | 4) Shoulder skin | Local |
| Kogan L 2000    |      |       |     | Scalp | 4) Scalp, left leg | 4) Local bones | 4) Shoulder skin | Local |

*references are intrgally reported after the table
| Author(s)                        | Gender | Age | Primary Site            | Additional Sites                        | Treatment | Follow-up | Response | Additional Notes |
|--------------------------------|--------|-----|-------------------------|-----------------------------------------|-----------|-----------|----------|------------------|
| Jarus-Dziedzic K 2000          | F      | 69  | Head                    | Yes Local bones                        | NR        | NR        | NR       | Surgery, RT      |
| Van Bockel LW 2003             | NR     | NR  | Head                    | Yes Dura, brain                         | NR        | NR        | NR       | Surgery, RT      |
| Adem K 2004                    | F      | 64  | Multiples (Gorlin Syndrome) | Rib, bilateral hip, iliac bones, sacrum, bilateral femurs | Lung      | 0         | NR       | NR               |
| Ting PT 2005                   | F      | 47  | Left malar eminence    | Ribs, right maxilla, vertebrae, right femur | Lung      | 2 years   | Few months| none             |
| Puri T 2006                    | F      | 66  | Left canthus            | Right clavicle, left superior pubic ramus, skull, ribs, column, left scapula | Yes       | 0         | NR       | NR               |
| Alonso V 2006                  | M      | 53  | Multiples               | Column                                  | NR        | NR        | NR       | RT               |
| Rodriguez C 2007               | NR     | NR  | NR                      | Yes                                     | NR        | NR        | NR       | NR               |
| Caron J 2009                   | 1) M   | 45  | 1) Nose                 | 1) Yes                                  | 1) Parotid, lung | 1) NR     | 1)NR 5 months | 1) Carboplatin + paclitaxel + MTX Cetuximab EGFR overexpression 2) Cetuximab |
|                               | 2) M   | 58  | 2) Right axilla         | 2) Yes                                  | 2) LN, lung | 2) NR     | 2) NR 3 months |                  |
| Alighissassi I 2009            | M      | 48  | Forehead                | 7th rib, column                         | Yes       | Local skin | 10 years | 3 weeks Cisplatin |
| Sakai T 2011                   | F      | 87  | Vulva                   | Left pubic bone                        | Local skin, pubic muscles | 4 years   | 2 years | Surgery |
| Alimoglu Y 2011                | M      | 65  | Face                    | L4-L5 Multiples                        | Local skin, nasal cavity | 2 years   | 6 months | Surgery |
| Taylor E 2012                  | F      | 86  | Left shoulder           | Sternum, first rib, sacrum, right acetabulum, femur | 0         | 6 weeks   |          | Palliative RT    |
| Galioto S 2012                 | 1) F   | 89  | 1) Nose                 | 1) Mandible                            | 1) 1.3 year | 1) NR     | 1) NR 2 years | 1) Surgery 2) Surgery |
|                               | 2) M   | 80  | 2) Face, scalp          | 2) Mandible                            | 2) 1.6 year | 2) NR     | 2) NR 6 months |                  |
| Stewart NC 2013                | M      | 51  | Back                    | T3, left 5th rib                       | Lung      | 3 years   | NR       | Vismodegib      |
| Di Lernia V 2013               | M      | 66  | Left side of the flank  | Yes                                    | Yes       | LN, lung, liver | 0         | 7 months Carboplatin + docetaxel |
| Tang S 2016                    | M      | 70  | Mild upper back         | Yes                                    | LN, lung, skin | 0         | 4.5 years | RT               |
| Piva de Freitas P 2017         | M      | 58  | Maxillary region        | L5                                     | LN        | 7 months   | NR       | 1.9 years Surgery Carboplatin + paclitaxel |

*references are intrgally reported after the table*
| Name          | Gender | Age | Location          | Lesion Description                                                                 | Treatment | Stage | Follow-up | Response | Notes     |
|---------------|--------|-----|-------------------|------------------------------------------------------------------------------------|-----------|-------|-----------|----------|-----------|
| Awad R 2018   | M      | 69  | Left shoulder     | Left clavicle, glenoid, humeral head                                             | Skin, LN, lung | 0     | NR        | Vismodegib, RT |
| Pabst A 2018  | F      | 44  | Face              | Axial skeleton                                                                    | 1 year    | NR    | NR        | Vismodegib |
| Tillman E 2019| F      | 60  | Face              | Right frontotemporal bone, sphenoid, and skull base, hilum, C7                   | Lung, LN  | NR    | NR        | NR       |
| Fram BR 2019  | F      | 71  | Right shoulder    | Right shoulder, right and left mid femoral shafts                               | None      | NR    | 1 months  | RT       |
| Glen P 2020   | F      | 73  | Right eyebrow     | Orbit                                                                             | None      | 0     | 2.7 years | Vismodegib |
| Bisceglia M 2020| F    | 43  | Retroauricular    | Cranium, vertebral column, ribs, pelvis and left femur                          | Yes       | Lung  | NR        | None      |
| Nigro O 2021  | M      | 73  | Back              | Left femur, left omerus, right scapula, D4, D5, D8, D11, S1, right acetabulum    | Yes       | Sucutaneous, skin | 10 years | Alive | Vismodegib |

*references are intrgally reported after the table*
References
Spies JW. Adenoid cystic carcinoma: Generalized metastases in three cases of basal cell type. Arch Surg. 1930;21(3):365-404.
De Navasquez S. Metastasising basal cell carcinoma. J Path Bact. 1941;53(3):437-439.
Singer A. Basal-cell carcinoma of face with remote metastases and pathological fractures. Br J Surg. 1945;32(128):537-538.
Cotran RS. Metastasizing basal cell carcinoma. Cancer. 1961;14(5):1036-1040.
Crawford HJ, Joslin CAF. Metastasizing basal-cell carcinoma. J Pathol. 1964;87(2):437-440.
Chien WL. Basal cell carcinoma with metastases to bones and lung. Med Adon. 1966;93:14-17.
Stell JS, Moyer DG, Dehne E. Basal cell epithelioma metastatic to bone. Arch Dermatol. 1966;93(3):338-340.
Assor D. Basal cell carcinoma with metastasis to bone. Report of two cases. Cancer. 1967;20(12):2125-2137.
Coletta DF, Haentze FE, Thomas CC. Metastasizing basal cell carcinoma of skin with myelophthisic anemia. Cancer. 1968;2(24):879-884.
Crammer L, Reingold IM, Wilson JW. Basal Cell Carcinoma of Skin Metastatic to Bone. Arch Derm. 1970;102(3):337-339.
Beretta G, Molinari R. Metastasizing Basal cell carcinoma with myelophthisic anemia. Tumori. 1970;56(3):175-180.
Hall TE, Tappan WM, Decker JW. Basal cell carcinoma with metastases. Report of two cases. Rocky Mt Med J. 1970;67(12), 39-40.
Mantell BS, Almeyda J. Metastasizing basal cell carcinoma. Br J Radiol. 1972;45(536):575-578.
Cornelius, CE 3rd. Bone. A site of metastatic basal cell carcinoma. Arch Surg. 1972;104(6):848-850.
Harris JH Jr, Libshitz H. Basal cell carcinoma of skin metastasizing to bone. J Can Assoc Radiol. 1972;23(3):217-220.
Jackson R, Adams RH. Horrifying basal cell carcinoma: A study of 33 cases and comparison with 435 non-horror cases, and a report on four metastatic cases. J Surg Oncol. 1973;5(5):431-462.
Funkhouser JW, Ayuthia IN. Metastasizing basal cell carcinoma: Case report. Ohio State Med J. 1973;69(7):521-523.
Mikhail GR, Nims LP, Kelly AP. Metastatic Basal Cell Carcinoma: review, pathogenesis and report of two cases. Arch Dermatol. 1977;113(9):1261-1269.
Christensen M, Briggs RM, Coblentz MG et al. Metastatic basal cell carcinoma: a review of the literature and report of two cases. Am Surg. 1978;44(6):382-387.
Bryarly RC Jr, Veach SR, Kornblut D. Metastasizing auricular basal cell carcinoma. Otolaryngol Head Neck Surg. 1980;88(1):40-43.
Rugge M, Cecchetto A, Tommasini A, et al. Basal Cell Carcinoma of skin metastatic to bone. Tumori. 1982;68(5):451-455.
Kleinberg C, Penetrante RB, Milgrom H et al. Metastatic Basal Cell Carcinoma of the skin. Metastasis to the skeletal system producing myelophthisic anemia. J Am Dermatol. 1982;7(5):655-659.
Weshler Z, levianian A, Peled I et al. Spinal metastases of Basal Cell Carcinoma. J Surg Oncol. 1984;25(1):28-33.
Conley J, Sachs ME, Romo T et al. Metastatic Basal Cell Carcinoma of the head and neck. Otolaryngol Head Neck Surg. 1985;93(1):78-85.
Hartman R, Hartman S, Green N. Long-term survival following bony metastases from basal cell carcinoma. Report of a case. Arch Dermatol. 1986;122(8):912-914.
Winkler PA and Guyuron B. Multiple metastases from basal cell naevus syndrome. Br J Plast Surg. 1987;40(5):528-531.
Postlethwaite KR, Courtney DJ, Gosney JR. Basal cell carcinoma with hepatic metastases. Br J Oral Maxillofac Surg. 1990;28(2):111-113.
Bason MM, Grant-Kels JM, Govil M. Metastatic basal cell carcinoma: response to chemotherapy. J Am Acad Dermatol. 1990;22(5 Pt 2):905-908.

*references are intrgally reported after the table*
Quin JD, McNeill C, Al-Dawoud A et al. Metastatic basal cell carcinoma causing cord compression. Scott Med J. 1990;35(3):85.

Lo JS, Snow SN, Reizner GT. Metastatic basal cell carcinoma: report of twelve cases with a review of the literature. J Am Acad Dermatol. 1991;24(5 Pt 1):715-719.

Ko CB, Walton S, Keckes K. Extensive and fatal basal cell carcinoma: a report of three cases. Br J Dermatol. 1992;127(2):164-176.

Beer RE, Alcalay J, Goldberg LH. Multiple bone metastases from basal cell carcinoma. Int J Dermatol. 1992;31(9):637-638.

Morselli P, Tosti A, Guerra L et al. Recurrent Basal Cell Carcinoma of the Back Infiltrating the Spine. Dermatol Surg Oncol. 1993;19(10):917-922.

Long SD, Kuhn MJ, Wynstra JH. Intracranial extension of basal cell carcinoma of the scalp. Comput Med Imaging Graph. 1993;17(6):469-471.

Oram Y, Oreno I, Alford E et al. Basal cell carcinoma of the scalp resulting in spine metastasis in a black patient. J Am Acad Dermatol. 1994;31(5 Pt 2):916-920.

Wallny T, Pakos E, Tschubel K. Osseous metastases of a basalioma as a rare cause of sacral pain: case report. Z Orthop Ihre Grenzgeb. 1996;134(3):260-2.

Kogan L, Ariely D, Pizov G. Metastatic Spinal Basal Cell Carcinoma: a case report and literature review. Ann Plast Surg. 2000;44(1):86-88.

Jarus-Dziedzic K, Zub W, Dziedzic D et al. Multiple metastases of carcinoma basocellulare into spinal column. J Neurooncol. 2000;48(1):57-62.

van Bockel LW, van de Broeke DG, Spliet W. Five patients with metastasized basal-cell carcinoma. Ned Tijdschr Geneeskd. 2003;147(45):2231-2236.

Adem K, Nassar A. Fine-Needle Aspiration of Lytic Bone Lesions in a 63-Year-Old Woman. Arch Pathol Lab Med. 2004;128(7):819-820.

Ting PT, Kasper R, Arlette JP. Metastatic Basal Cell Carcinoma: Report of Two Cases and Literature Review. J Cutan Med Surg. 2005;9(1):10-15.

Puri T, Gunabushanam G, Sharma R et al. Extensive bone metastases from basal cell carcinoma of the eye. Singapore Med J. 2006;47(9).811.

Alimonoglu Y, Kilic E, Mercan H. Metastatic Basal Cell Carcinoma. J Craniofac Surg. 2011;22(3):1134-1136.

Taylor E, Evans J. Metastastic Basal Cell Carcinoma: A Case Report. J Med Cases. 2012;3(6):344-346.

Galioto S, Lucioni M, Pastori M. Metastatic basal cell carcinoma: two cases involving the maxillofacial area. Int J Dermatol. 2012;51(9):1097-1100.

Stewart NC, O’Brien B, Francis L. Metastasis of basal cell carcinoma in a patient with basal cell carcinoma syndrome. Pathology. 2013;45(2):200-202.

Di Lernia V, Ricci C, Zalaudek I, Argenziano G. Metastasizing basal cell carcinoma. Cutis. 2013;92(5):244-246.

Tang S, Thompson S, Smee R. Metastatic basal cell carcinoma: case series and review of the literature. Australas J Dermatol. 2017;58(2):e40-43.

Awad R, Barreto Andrade JC, Mousa H. Invasive Basal Cell Carcinoma of the Skin Treated Successfully with Vismodegib: A Case Report. Perm J. 2018;22:17-181.

Pabst A, Klinghuber M, Müller G. Extensive bony metastases from facial metatypical basal cell carcinoma: a case report. Br J Oral Maxillofac Surg. 2019;57(1):82-84.

*references are intrgally reported after the table
Tillman E, Parekh PK, Grimwood RE. Locally Destructive Metastatic Basal Cell Carcinoma. Cutis. 2019;103(1):e23-25.

Fram BR, Strony J, Jagannathan G, Brown SA. Cutaneous Basal Cell Carcinoma with Bone Metastases: An Orthopaedic Case Report. Case Rep Orthop. 2019:1628980.

Glen P, Ferrugia D, Ferrier J. Complete remission of advanced, locally invasive basal cell carcinoma with vismodegib. Int J Oral Maxillofac Surg. 202;pii: S0901-5027(20)30094-1.

Bisceglia M, Panniello G, Nirchio V, et al. Metastatic Cutaneous Basal Cell Carcinoma: Report of 2 Cases Preceding The Hedgehog Pathway Antagonists Era. Adv Anat Pathol 2020;27:98–111

*references are intrgally reported after the table