

Review Article Correlation of VOM of Indian Homo Erectus with China Man

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Abstract— The skull cap of Narmada man *Homo erectus* Narmadanensis was found in Narmada Valley near village Hathnora (22° 52' N; 77° 52' E) in fossiliferous boulder conglomerate, in district Sehore, M.P., India. The Skull Cap is completely fossilized undistorted, renal vault nearly complete except few left Supra-orbital and statures are nicely preserved. The various morphological features and robust form of skull and excessive thickness of the bones indicate that it belongs to adult male individual (Sonakia, 1984).

The discovery of Skull Cap of *Homo erectus* in fossiliferous boulder conglomerate in association of other mammalian fossil is recorded in stratigraphic column of Quaternary deposits at the depth of 83 m in Narmada valley, where estimated total thickness of deposits is about (325 m). This blanket of sediments consist of three domain viz glacial, fluvio-glacial and fluvial, which were deposited in distinct environment during Pleistocene to Holocene time (Khan & Sonakia 1992). The statistical analysis of sediments from these different domain in vertical column has been conducted to ascertain the environment of sedimentation and trace the breaks and variation in climate. (Khan et.al. in press). The Author considers it as one of the earliest and oldest *Homo erectus* in Asia. The estimation is based on comparative study of fossils assemblage, association of Tephra beds, palaeosoles, occurrence of glacial and fluvio-glacial deposits underlying fossiliferous boulder conglomerate, extensive and intensive analysis of sediments, rate of accumulation sediment, grain morphology of quartz, heavy mineral assemblage, palaeo environments, lithostratigraphy and biostratigraphic position of boulder conglomerate. In present paper attempts have been made for the first time to correlate the various stratigraphic columns of associated hominid fossils of Narmada valley (325 m) India and that of Luochuan sequence (90-120 m) Chenjiawo (50m) and Congwanling sequence (36 m) of China on unified coded model of Quaternary platform tied up and developed at mean sea level. The study revealed that the depth of occurrence of Narmada skull cap on unified Quaternary platform is about (83 m) as compared to with that of Chenjiawo and Gongwanling of China which occur at very shallow depth of 38 and 26 m respectively. The estimated age of Narmada Man based on these parameters is about 1.38 m.y. (+), which is greater than *Homo erectus* of Chenjiawo 0.65 m.y. and Gongwanling 1.15 m.y. man of China An Zhisheng and Ho Chuan Kun (1989).

Index Terms— Ash beds, Boulder conglomerate, fluvial, fluvio-glacial, glacial, *Homo erectus*, *Homo sapiens* Pleistocene, Quaternary Platform, sedimentation *Homo sapiens*, *Homo erectus*

1. INTRODUCTION

The Quaternary tract of Narmada basin covers an area of about 12950 sq. km starting from west of Jabalpur (23°07'79°530) to east of Handia (22° 29'; 76° 58') for a distance of about 320 km. It is found to be ideal locus of Quaternary sedimentation in Central India as witness by multi-cyclic sequence of Quaternary terraces in the valley. The total estimated thickness of Quaternary sediments in the central sector of Narmada is about 535 m.

In present paper attempts have been for the first time to correlate the Quaternary of Hominid locality Hathnora (22°52'77°52') (325 m) India, with that of Luochuan (90-120 m) Chenjiawo (50m) and Congwanling sequence (36 m) of China on unified coded model of Quaternary platform tied up and developed at mean sea level to ascertain the depth of occurrence

and of age of skull cap of Narmada *Homo erectus* Sonakia (1984).

2. PRESENT WORK

In present paper attempts have been for the first time to synthesis, analyze synchronize and condensed the vast data acquired, accrued in last two decade by authors by extensive field work and intensive laboratory studies in Narmada valley to understand the deposition of Quaternary sediments, evolution of landscape profile, palaeo environments, lithostratigraphy, biostratigraphic position of boulder conglomerate in Narmada structural riparian rift trench. In addition attempts are being made to delineate configuration of Quaternary blanket, hospitality and reception of sediments and rate of sedimentation, its sequential &, chronological environment in rock basin. The Quaternary of Narmada consist of three domains viz glacial, fluvio-glacial and fluvial, were

deposited in distinct environment during Pleistocene to Holocene time (Khan & Sonakia 1992). It also includes study of various environment, & litho facies, of sediment, heavy mineral assemblage their variation, sedimentary structures, cyclic sedimentation and abundance of rock gravel to build up the lithostratigraphy of sediment, to conceive the three dimensional model of Quaternary platform of Narmada with special reference to concealed and hidden fossiliferous boulder conglomerate with the sole objective to correlate the Quaternary of Hominid locality Hathnora (22°52'77"52') (325 m) India, with that of Luochuan (90-120 m) Chenjiawo (50m) and Congwanling sequence (36 m) of China on unified coded model of Quaternary platform.

3. HOMINID LOCALITY HATHNORA

(22°-52' N-77° 52' - E)

In Narmada Valley the area around Hominid locality of Hathnora is occupied by thick and multiple sequences of Quaternary sediments. Based on study of statistical parameters of sediment their deviation and breaks in vertical stratigraphic column between 00.00 to 260 m below the ground level indicate that the sediments consist of three domains viz glacial, fluvio-glacial and fluvial. (Khan et.al in press) The study of these concealed sediments, their sedimentary environments and sedimentation and correlation both in vertical and horizontal columns indicates that the lower most units, Boulder bed (20 to 260 m. below ground level) is of glacial origin, whereas the fossiliferous bed Boulder conglomerate (260 to 278m. above m.s.l.) is fluvio-glacial and top four formations in increasing antiquity Sohagpur, Shahganj, Hoshangabad and Janwasa (278 to 350m. above m.s.l.) are fluvial origin and represent the complete sequence of Quaternary sedimentation in Central India (Khan *et al* 1991). The study of sediments display diagnostic characteristics of glacial, fluvio-glacial and fluvial environment at different depth and levels 000.m to 150, 150 to 350, and 350 to 550 m from glacial, fluvio-glacial fluvial, and fluvial deposit (150 samples). The critical analysis of these parameters exhibits sediment textural linkage to long evolution in glacial, fluvio-

glacial and fluvial environment in time and space in increasing antiquity in the valley. The characteristics inherited by the sediments from pre-existing domain of sediments are glacial & terrestrial & environment. The diagenetic and diagnostic features; varying degrees of heterogeneity, sediment angularity roundness, degree of sorting indicate evolution and sedimentation of quaternary sediments in a high-energy turmoil glacial environment on tectonically dislocated and unstable platform. The sediments confined up to 150 m below ground level represent paleo fluvial domain of Narmada and represent multi cycle sedimentation under varying energy condition on oscillating platform. The vertical variation in increasing antiquity in textural parameters and distinct breaks at specific level identified indicate changes of environments of sedimentation in vertical columns from glacial at the bottom of valley trough subsequently followed by fluvio-glacial and further overlain by fluvial deposits which is related with change of climate and tectonic in watershed of Narmada

The skull cap of Narmada man *Homo erectus Narmadanesis* was found in near village Hathnora (22° 52" N; 77° 52" E) in fossiliferous boulder conglomerate, (Sonakia, 1984). at an elevation of about 268m. above the m.s.l. and at the depth of about 83m. in Central Narmada Valley. These deposits are underlain by glacial deposits and overlain by fluvial deposits of palaeo-domain of Narmada. The Quaternary sequence of Hathnora is described by Khan & Sonakia (1992).

The boulder conglomerate at Hominid locality Hathnora consist of stratified hard compact basal unit comprising of rock fragments of different shape and size of granite, quartzite, sandstone, agate, chalcedony, chert, basalt and calcareous nodules tightly cemented in the matrix of brown, red and grayish sand and silt. These rock clastics constitute various sub-litho units and are supported by grey and brownish, cross bedded sand. The sub-litho units consists of mostly pebble supported horizons which contains vertebrate fossils, stone implements, like chopper, scraper hand axes and core flakes mostly of quartzite, flint, chalcedony and quartzite..

The rock basin of Narmada is occupied by the Quaternary sediments of three domains viz. glacial, fluvio-glacial and fluvial and was deposited in distinct environments during Quaternary time. The glacial deposit comprised of thick pile of sediments occupied base of rock basin and was deposited by glacial activities in dry and cold climatic condition during early Pleistocene time. The boulder conglomerate constitute fossiliferous horizon of Narmada, deposited in fluvio-glacial environments (interglacial). It is a marker horizon of Quaternary sedimentation in Narmada Valley. Its disposition and relation with other deposits in the valley, indicates a significant change in climate from cold dry to warm and humid, during which the sediment were re-worked from glacial front intermittently and deposited in the valley over a very long time. The skull cap of *Homo erectus* (Narmada Man) and other fauna are recorded along with calc-nodules within the boulder conglomerate; suggest that warm climatic phase prevailed. The Lantian hominid cranium at Gongwangling was found in silty loess at the depth of about 26m. and it Luochuan standard sequence the fossil bearing stratum un-doubted to the middle part of silty loess L-15 which at Luochuan was dated to be 1.09 to 1.20 m.y.r. The hominid fossil and associated faunas were discovered in the middle part of silty layer; the age of the fossils at Gongwanling can be pinpointed narrowly to 1.15 m.y.r. This dates differs from the earliest (0.75-0.80 m.y.r.) of Ma. at. al. (1978) and from 1 m.y.r. estimate of Cheng at. al. (1978). The Lantian fossil hominid at Gondwangling is considered as earliest *Homo erectus* in China. Ho Chuan Kun (1986).

In India Narmada basin considering the one of a main loci of Quaternary sedimentation, and assuming the uniform accumulation rate of sediment in the basin in the line of Ma. at. al. (1978) and comprising the Narmada sequence of Quaternary deposit (325 m.) with those of Luochuan standard sequence of Chenjiawo and Congwangling sequence of China. The skull cap of *Homo erectus* (Narmada Man) recovered from the boulder conglomerate of fluvio-glacial origin in middle of Quaternary deposit from deep level of Narmada, at the depth of 83 m. above glacial deposits, in association of ash bed, as compared to

Chanjiawo Hominid from inter bedded sequence of paleosols loess and silty loess at the depth of 38 m. and Congwangling from similar sequence in the valley persistently over longer period during deposition of sediment of this marker horizon..

The Narmada skull cap of *Homo erectus* which is recovered from the vom of basal unit of boulder conglomerate at the depth of 83 m. (278 m. above m.s.l.) is estimated to be of upper segment of lower Pleistocene age. It is older than the *Homo erectus* of Chanjiawo, Congwangling of China which were recovered from paleosols and loess deposit at the depth of 38 and 26 m. The Quaternary sequence of Narmada (325 m.) as compared to Louchuan (136 m.) sections of China on unified Quaternary platform is older and represents the complete and type sequence of Quaternary sedimentation in Central India. The occurrence of skull cap of early man at the depth of 83 m. in basal unit of boulder conglomerate of fluvio-glacial origin in Narmada Valley is one of the earliest and oldest *Homo erectus* in Asia. Figure No_1

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5. CONCLUSION

The skull cap of Narmada man *Homo erectus* Narmadensis was found in near village

Hathnora (22 ° 52" N; 77 ° 52" E) district Sehore, M.P., India in fossiliferous boulder conglomerate. It is recovered in stratigraphic column of Quaternary deposits at the depth of 83 m in of Narmada valley, where estimated total thickness of deposits is about (325 m). This blanket of sediments consist of three domains viz glacial, fluvio-glacial and fluvial, which were deposited in distinct environment during Pleistocene to Holocene time (Khan & Sonakia 1992).

The Skull Cap is completely fossilized undistorted, renal vault nearly complete except few left Supra-orbital and sutures which are nicely preserved. The various morphological features and robust form of skull and excessive thickness of the bones indicate that it belongs to adult male individual (Sonakia, 1984). The discovery of Skull Cap of *Homo erectus* in fossiliferous boulder conglomerate in association of other mammalian fossil is recorded at the depth of 83 m; is estimated to about 1.38 m.y.r. (+) in age and can be considered as the oldest *Homo erectus* in Asia.

The estimation is based on study of fossils assemblage, association of as beds, palaeo soles, tephra bed in boulder conglomerate; palaeo environments, lithostratigraphic and biostratigraphic position of boulder conglomerate, depth of occurrence of skull cap (83 m.) and rate of accumulation of sediment in basin and elevation of fossil yielding horizon (330 m above m.s.l.), association of tephra beds, palaeo-sole, palaeo-environments, glacial and interglacial activities, in Central India during Quaternary time.

The estimated age of Narmada is based on these parameters is about 1.38 m.y.r. (+), which is greater than *Homo erectus* of Chenjiawo 0.65 m.y. and Gongwangling man of China 1.15 m.y. Ho Chuan Kun (1988), which occurs at the shallower depth of 38 and 26 m respectively in stratigraphic column of unified Quaternary platform as compared to Narmada man.

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